

COMMERCIAL FERTILIZERS

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INDIANA FERTILIZER LAW

The Indiana Fertilizer Law, enacted in 1881 and amended in 1899 and 1901, is an act which provides for registration, correct labeling, inspection and analysis of fertilizer exposed for sale or sold in Indiana. The law is designed to afford protection to purchasers, manufacturers of and dealers in fertilizers. To furnish the purchaser of fertilizer with a guarantee of the plant food content of the material that he contemplates buying, the law provides that every package of fertilizer shall have attached in a conspicuous place the label of the State Chemist. This label shows the guaranteed percentage of total nitrogen, either the total or soluble and reverted phosphoric acid and the water-soluble potash. This information and the proper counselling from the local county agent should enable the purchaser to intelligently buy the type of fertilizer needed for various crops and soils. The presence of the State Chemist label shows that the manufacturer has complied with the law by registering and guaranteeing the fertilizer. It does not indicate that the State Chemist guarantees the fertilizer.

On request, Circular 314 which contains a copy of the law, the recent rulings under it and general information on how to comply with it, will be sent by the State Chemist, Purdue University Agricultural Experiment Station, Lafayette, Indiana.

In purchasing commercial fertilizers, the farmer or grower has the protection of a thorough and systematic inspection service. This service is financed wholly from registration fees and inspection fees obtained from the sale of the official State Chemist labels or tags. The cost of this service to the farmer is approximately one-half of one percent of the price he pays for the fertilizer. This percentage, though slightly lower now than at the time the law was enacted, has held fairly constant over the years. The fees so collected are used in equipping, supplying and maintaining laboratories and in paying salaries of inspectors, clerical workers and chemists who perform the control work. During recent years some of the funds have been used in financing research to improve sampling and analytical methods, to improve the production of crops and the nutrition of animals and to develop new non-food uses for agricultural products. A reserve of funds is also being maintained to assure continuation of adequate inspection and control work during deficit periods such as occurred in the early 'thirties.

* Resigned August 31, 1947.

** Resigned May 31, 1947.

Research Projects Which Were Partially Supported by Fertilizer Funds in 1947

Project No.	Subject
2	A Study of the Chemical Composition and Nutritive Value of Corn as Related to Genetic Constitution and Soil Fertility.
168	The Chemical Compounding of Spray Materials, and the Analysis of Residues Resulting from Applications of These and Other Spray Materials.
176	A Study of the Nature and Content of the Carotenoid Pigments and Content of Vitamin C of Tomatoes and of Other Lycopersicon Species and of the Possibilities of Breeding Commercial Varieties, Genetically Constituted to Produce Higher Concentrations of Vitamin C and Provitamin A.
212	A Survey of the Iodine in Water, Soil and Crops of Indiana.
221	Exploratory Studies on the Effect of Different Levels of Nitrogen in Soils on the Nutritive Value of Corn.
274	Phosphorus Content, Phosphorus Distribution, and Phytase Activity in Alfalfa as Related to Genetic Constitution and Phosphorus Fertilization.
302	Preparation and Properties of Xylan, Hemicellulose, Cellulose and Other Constituents from Plants and Plant Residues.
315	Protein and Amino Acid Content of Alfalfa as Affected by Soil Fertility, Genetic Constitution, Processing and Storage.
332	The Chemical Nature of Metabolic Products of Fungi.
348	Effect of Manganese and Other Minor Elements on Some Organic Constituents of Crop Plants.
389	Effect of Conditioning and Storage Before Marketing on Starch, Protein, Oil and Grade Factors of Grains.
208	Improvement of Method for Determining Potash in Fertilizers.

Brief reports on these projects are being published in the Annual Report of the Director of the Agricultural Experiment Station.

GRADES APPROVED FOR INDIANA

Under sponsorship of the Middlewest Soil Improvement Committee, state agronomists of the Midwest met at Chicago, February 26, 1948 to prepare a uniform list of mixed fertilizer ratios and grades for the region. The ratios and grades on the list which the Purdue agronomists have approved for use on Indiana soils effective July 1, 1948 are listed below. The approved list for the previous year is also shown for comparison.

Ratio	Minimum grade	
	July 1, 1947 to June 30, 1948	July 1, 1948 to June 30, 1949
0-1-1	0-12-12	0-12-12
0-1-2	0-10-20	0-10-20
0-1-3	0- 9-27	0- 9-27
0-2-1	0-16- 8	0-20-10
1-1-1	8- 8- 8	8- 8- 8
1-2-1	6-12- 6	-----
1-2-2	5-10-10	5-10-10
1-3-2	4-12- 8	-----
1-3-6	3- 9-18	3- 9-18
1-4-2	-----	4-16- 8
1-4-4	3-12-12	3-12-12
1-6-3	3-18- 9	-----
2-1-1	10- 6- 4	10- 6- 4

Also approved are higher grades of the same ratios, and mixed fertilizer materials.

FERTILIZERS AND APPLICATION RATES RECOMMENDED BY THE PURDUE AGRICULTURAL EXPERIMENT STATION

Field Crops¹

(Recommendations of Department of Agronomy)

Soils	Soil or plant tissue tests		Corn ²		Small grains seeded to clover or grass-legume mixture		Alfalfa seeded alone or in grains	Row treatment for tobacco
	Available phosphate	Available potash	Grade	Pounds per acre	Grade	Pounds per acre	Grade 400 lbs. per acre)	Grade (300 lbs. per acre)
Well drained light colored medium to heavy soils	Low	Low	0-12-12	200	3-12-12	350	0-12-12	3-12-12
			or		0-12-12			
	High	Low	0-10-20	200	3- 9-18	350	0-10-20	3- 9-18
			or		0-10-20			
	Low	High	0-20-10	150	4-16- 8	300	0-20-10	4-16- 8
			or		0-20-10			
Dark colored medium to heavy soils	Low	Low	0-12-12	200	0-12-12	300	0-10-20	3-12-12
			or				0-12-12	
High	Low	0-10-20	200	0-10-20	300	0- 9-27	3- 9-18	
						or		0-10-20
Low	High	0-20-10	150	0-20-10	200	0-12-12	4-16- 8	
						or		0-20-10
Poorly drained gray soils "Gray Flats"	Low	Low	3-12-12	200	3-12-12	400	Crops not adapted to these soils	8- 8- 8
			or						0-12-12
	High	Low	3- 9-18	200	3- 9-18	400	adapted to these soils	3- 9-18
			or						0-10-20
	Low	High	4-16- 8	150	4-16- 8	300	adapted to these soils	4-16- 8
			or						0-20-10
Light colored sandy soils	Low	Low	0-12-12	150	3- 9-18	300	0-10-20	3- 9-18
			or						0-10-20
High	Low	0-10-20	150	0- 9-27	300	0- 9-27	0- 9-27	
		or		0- 9-27				
Low	High	0-20-10	150	3-12-12	300	0-12-12	3-12-12	
		or		0-12-12				
Black sandy soils	Low	Low	0-10-20	200	0-10-20	300	0-10-20	3- 9-18
			or						0-10-20
	High	Low	0- 9-27	300	0- 9-27	300	0- 9-27	0- 9-27
Low	Low	0-10-20	300	Crops not adapted to these soil				
High	Low	0- 9-27		Crops not adapted to these soil				

¹ The above recommendations have proven economically sound when used with adapted rotations. If adequate supplies of fertilizer were available, double the above rates would be more in line with 1947 prices. If recommended analysis are not available, the rate of application of the substituted grade should be adjusted to supply approximately the same amount of plant food.

² Rates indicated for row application. For hill application use half as much. Straight fertilizer materials can be substituted for mixed fertilizers with adjustments in rates and methods of application. Straight nitrogen materials are recommended for top dressing small grains and pastures, and for plow under purposes for corn when needed. For detailed recommendations consult the local county agent or the Purdue Agronomy Department.

HORTICULTURAL CROPS

(Recommendations of Department of Horticulture)

Crop	Grades recommended for use in 1947	Optimum rate per acre in pounds	Soil conditions
Potatoes	0-9-27	750-1000	Muck
	3-12-12	750-1000	Mineral soils
Red beets	0-9-27 and salt and nitrate of soda or ammonium nitrate	500 500 100	Muck
	3-12-12		Mineral soil
Sweet corn	0-9-27	250-500	Muck
Mint	0-20-20 or 0-10-20 or 0-9-27	300	Muck
Early cabbage	10-6-4	1000	Mineral soils
Cabbage	0-9-27	750	Muck
Carrots	0-9-27	1000	Muck
Onions	3-9-18	1000-2000	Muck
Celery	0-9-27	2000	
	and ammonium nitrate	300-500	Muck
Spinach	0-9-27	500	
	and CuSO ₄ and nitrate of soda or	500 } 50 }	Muck
	ammonium nitrate	200 }	
Cannery tomatoes ¹	3-12-12 or 0-12-12 or 3-18-9 or 3-9-18 or 0-20-20 or 0-20-10	750-1000	Loams
	0-10-20	750-1000	Black soil
	8-8-8	750-1000	Very light colored soils
Tomatoes (market)	3-12-12	500	Loams
Sweet potatoes	3-9-18	450	Sand without legume
Watermelons	4-16-8	500-1000	Sandy loams
Muskmelons			
Market garden crops	4-16-8 and nitrate of soda or ammonium nitrate	500-1000 200-300	Silt loams with manure and black loam soil
	Home gardens	3-12-12 and nitrate top dress	1000	Silt loams and sandy loams
Cannery corn ²	0-20-10 or 3-9-18 or 4-16-8	200	Silt and Black loams
Cannery peas	3-12-12 or 4-16-8	300	Silt and black loams

¹ Tomatoes—200 to 300 pounds per acre should be applied in the row; the remainder plowed under or placed in the furrow bottom.

² Sweet Corn—Where yields average less than two tons per acre plow under extra fertilizer as for field corn.

GENERAL INFORMATION

Manufacturers—The term "Commercial Fertilizer" is defined by law to include all materials used for manurial purposes except barnyard manure, marl, lime, wood ashes, and plaster. Barnyard manure, sheep manure, and muck, when dried or processed in any way, come under the provisions of the law. Before any commercial fertilizer is exposed or offered for sale or sold in the state, it is necessary to register the fertilizer with the State Chemist and tag it properly with Indiana State tags or labels. Bulk shipments must be accompanied with sufficient labels to cover the total weight of the material.

Manufacturers should not ship fertilizer without having it properly tagged with Indiana State tags. Experience has shown that when this is done it is difficult to avoid the sale of untagged fertilizer. The State Chemist has no authority to grant permission to a manufacturer to ship unlabeled fertilizer.

Agents, Dealers and Distributors—Agents should familiarize themselves with the provisions of the Indiana Fertilizer Law. Each package of fertilizer offered or exposed for sale or sold in Indiana must have attached to it the Indiana State tag bearing the facsimile signature of the State Chemist (see reproduction, p. 8). If you receive a car of untagged fertilizer, wire the manufacturer for tags and notify the State Chemist. Do not accept the shipment until proper tags are furnished.

When inspection reports show that fertilizer in your possession is deficient enough so that a refund is calculated on it, withdraw it from sale at once and notify the State Chemist giving the date and amount withdrawn from sale.

Consumers—The Indiana State Tag is your guarantee of the fertilizer that you purchase. Read the tag. Let the analysis on the state tag be your guide rather than the brand name. Refuse to accept any fertilizer that does not have the Indiana State Tag attached to each package.

When analysis of a fertilizer is desired, do not forward a sample but notify the State Chemist, telling how much you have on hand and send in a copy of the Official label which is attached to the fertilizer.

Definition of Terms and Interpretation of Results on Fertilizers and Liming Materials Adopted by the Association of Official Agricultural Chemists.—Write for Circular No. 265, Purdue University Agricultural Experiment Station, Lafayette, Indiana.

MEANING OF FERTILIZER ANALYSIS

Nitrogen—In recent years water-soluble forms of nitrogen have largely taken the place of organic materials used years ago in mixed fertilizers.

A few of the sources of water soluble forms of nitrogen are as follows: Nitrate of soda (natural and synthetic), ammonium sulphate, calcium urea, calcium nitro, urea, cyanamid and calcium nitrate.

Since water-soluble forms of nitrogen are considered as readily available for plant growth, if 80 percent of the guaranteed nitrogen in a fertilizer is water-soluble, the nitrogen is regarded as of satisfactory quality.

Phosphoric Acid—The phosphoric in superphosphate is linked up as chemical compounds with calcium, iron and aluminum. It may be present as mono-, di-, or tricalcium phosphate.

As monocalcium phosphate, $\text{CaH}_2(\text{PO}_4)_2$, it is water-soluble and readily available to plants for growth.

As dicalcium phosphate $\text{Ca}_2\text{H}_2(\text{PO}_4)_2$, it is soluble in the soil solution and rendered available to plants for growth.

As tricalcium phosphate, $\text{Ca}_3(\text{PO}_4)_2$, it is somewhat less available to plants,

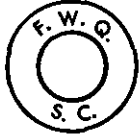
The bulk of the fertilizer sold today contains mixtures of large amounts of mono- and dicalcium phosphate and some tricalcium phosphate. This is in contrast to the earlier years when most of the fertilizer used was bone where the phosphorus is present as tricalcium phosphate.

In acidulated goods the phosphorus is sold only on the basis of the soluble and reverted phosphoric acid (P_2O_5) content. The sum of the soluble and reverted phosphoric acid (P_2O_5) is also called the available phosphoric acid.

In bone and rock phosphate, when sold as such, the phosphorus is sold only on the basis of the total phosphoric acid (P_2O_5) content. It is only fair to state, however, that about 60 to 75 percent of the total phosphoric acid (P_2O_5) content of bone is available by the neutral ammonium citrate method, while only from 3 to 6 percent of the total phosphoric acid (P_2O_5) of rock phosphate is available by the same method.

Potash—Potash, as the official label states, must be soluble in water, the form in which it is considered directly available for plant use.

OFFICIAL STATE LABEL

344


No. 10050-A
JOHN DOE AND COMPANY,
of Lafayette, Indiana,
Guarantees this
DOE'S 3-12-12 FERTILIZER
to contain not less than
3.0 percent of total nitrogen (N),
12.0 percent of soluble and reverted
phosphoric acid (P_2O_5),
0.0 percent of insoluble phosphoric
acid (P_2O_5),
0.0 percent of total phosphoric
acid (P_2O_5), and
12.0 percent of potash (K_2O), soluble
in water,

The above is the manufacturers or dealers guarantee.

J. W. Q. State Chemist
Purdue University Agricultural
Experiment Station, Lafayette, Ind.

The only label recognized under the law bears the facsimile signature of the State Chemist. (See Reproduction.) The label as issued is always printed and contains all the facts required by law; any alteration thereon constitutes a violation of the law.

Label No. 10500 guarantees that each 100 pounds of fertilizer will contain at least 3.0 pounds of total nitrogen (N), 12.0 pounds of soluble and reverted phosphoric acid (P_2O_5), 0.0 pounds of insoluble phosphoric acid (P_2O_5), and 12.0 pounds of water-soluble Potash (K_2O).

EVALUATION OF COMMERCIAL FERTILIZERS

Many letters are answered yearly relative to the value of various fertilizers and fertilizer mixtures. In order to partially answer these problems most of the common fertilizers have been grouped in the following table.

TABLE 1—Average Composition and Comparative Evaluation of the Common Fertilizing Materials

MATERIAL	NITROGEN PERCENTS							PHOSPHORIC ACID PERCENTS			Potash	Value
	Total	Water-soluble organic	Water-Solubl ammonia	Water-soluble nitrate	Water-insoluble organic	Active insoluble organic	Inactive insoluble organic	Total	Insoluble	Availabl	Water-soluble percent	*Comparative
Ammonium Nitrate.....	32.50		16.25	16.25								\$65.00
Sodium Nitrate.....	15.50			15.50								31.00
Calcium Nitrate.....	14.00			14.00								28.00
Ammonium Sulphate.....	20.50		20.50									41.00
Cyanamid.....	22.00	21.60			0.40							44.00
Garbage Tankage.....	3.30	0.63			2.70	0.66	2.04	4.50	2.50	2.00	0.75	10.35
Cattle Manure.....	2.50	0.52			1.98	0.72	1.26	1.60			1.60	9.52
Horse Manure.....	0.65							0.62			1.37	3.70
Horse Manure, dried, ground.....	2.63							2.59			1.97	9.80
Sheep Manure.....	2.50	0.57			1.93	0.62	1.31	1.80			2.20	9.56
Poultry Manure.....	4.30	1.80	0.60		1.80			3.10			1.70	13.32
Poultry Manure and Peat Moss.....	1.70	0.58			1.12	0.60	0.52	2.60			1.00	6.72
Mushroom Compost.....	0.70	0.05			0.65	0.30	0.35	0.50				1.65
Muck.....	2.00	0.13			0.65	0.30	1.56					4.00
Peat Moss.....	2.20	0.10			2.10	0.60	1.50	0.15				4.45
Activated Sewage.....	6.00	0.84			5.11	3.54	1.57	2.20				13.54
Untreated Sewage.....	1.50	0.10			1.40	0.72	0.68	1.30				3.39
Raw Bone.....	3.60	0.84			2.80	2.03	0.77	23.40	9.20	14.20		24.15
Steamed Bone.....	2.20	0.42			1.79	1.41	0.38	27.50	10.40	17.10		24.62
Animal Tankage.....	6.00	1.50			4.50	2.88	1.52	12.00	4.00	8.00		21.20
Bone Black.....	1.80				1.80	0.09	1.21	30.30	23.40	6.90		16.52
Basic Slag.....								17.70	2.70	15.00		15.83
Basic Slag, Low Grade.....								8.00	0.80	7.20		7.20
Basic Slag, High Grade.....								32.60	1.90	30.70		29.34
Raw Rock Phosphate.....								33.40	31.10	2.30		10.02
Rock Phosphate, defluorinated.....								22.50	5.20	17.30		21.62
Superphosphate—												
0-40-0.....								41.00	1.00	40.00		60.00
0-24-0.....								25.00	1.00	24.00		36.00
0-20-0.....								21.00	1.00	20.00		30.00
0-16-0.....								17.00	1.00	16.00		24.00
Muriate of Potash.....											50.00	75.00
Sulphate of Potash.....											48.00	72.00
Manure Salts.....											20.00	30.00
Kalnit.....											14.00	21.00
Tobacco Dust.....	1.50	0.31		0.39	0.80	0.17	0.63	0.50			5.40	11.45
Coal Ash.....								0.40			0.10	0.38
Corn Cob Ash.....								4.90			31.00	46.50
Hard Wood Ash.....								2.20			10.20	16.90
Soft Wood Ash.....								3.10			4.30	8.62

* Comparative values per ton calculated from Table No. 2.

Values appearing in the inactive insoluble organic column in heavy type indicate an inferior source of nitrogen.

RESULTS OF THE 1947 INSPECTION

It is estimated from the sale of tags that 800,151 tons of commercial fertilizer with a retail value of \$30,331,055 were sold in Indiana during 1947. This is about a 15 percent increase in tonnage over the previous high year of 1946. As the price per pound of plant food increased 10 percent in 1947 over 1946, the estimated retail value of the fertilizer was about 30 percent higher and represents the largest fertilizer investment ever recorded in Indiana in any one year.

Inspectors representing the State Chemist visited every county in the state in collecting 2,036 official samples for analysis. One sample was drawn for each 395 tons of commercial fertilizer that was sold in the state.

The average ton of fertilizer sold contained 497 pounds of actual plant food and the average analysis was 2.3 percent total nitrogen, 12.5 percent available phosphoric acid, and 8.1 percent of water-soluble potash.

REFUNDS

When deficiencies in analysis amounting to \$1.00 or more per ton occur, refunds are calculated and indicated on the reports sent to the manufacturers and consumers. Refunds on mixed fertilizers are calculated when one ingredient is deficient to the extent of \$1.00 or more per ton regardless of the excess in amounts of other ingredients.

Nitrogen, phosphoric acid and potash play definite roles in crop production. An excess of one ingredient will not compensate for the deficiency of another.

All refunds are required to be distributed to the consumer whenever possible, and receipts for them must be filed with the State Chemist. If there is no record as to the consumer, the refund may be turned over to a local charitable organization, but receipts in either case must be filed with the State Chemist.

Of the 1947 inspection samples of fertilizer tested, 99 showed deficiencies in analysis in one or more ingredients sufficiently large to warrant the calculation of a refund. Refunds amounting to \$1,882.45 were paid by 24 manufacturers on 99 shipments of deficient fertilizer in 1947.

The following table lists the values of fertilizer ingredients to be used in the calculation of the values that will be placed on official fertilizer inspection reports covering the 1948 inspection of commercial fertilizers.

These values are for comparative purposes only and not for the purpose of fixing the value of mixed fertilizers. They may, however, be used in comparing the value of inspection samples with manufacturers' guarantee, and can also be used by fertilizer purchasers in calculating the relative values of various brands offered for sale by different manufacturers.

TABLE 2. PRICES TO BE USED IN ESTIMATING COMPARATIVE VALUES OF FERTILIZER FOR 1948

	Per pound cents	Per unit or percent, dollars
All fertilizer:		
Nitrogen (N)	10.0	2.00
Soluble and reverted phosphoric acid (P ₂ O ₅)	7.5	1.50
Potash (K ₂ O) soluble in water	7.5	1.50
Mixed fertilizer containing nitrogen—		
Insoluble phosphoric acid (P ₂ O ₅)	1.5	0.30
Precipitated bone—		
Available phosphoric acid (P ₂ O ₅)	5.0	1.00
Insoluble phosphoric acid (P ₂ O ₅)	1.5	0.30
Animal by-products, bone tankage, etc.—		
Total phosphoric acid (P ₂ O ₅)	3.5	0.70
Basic slag—		
Total phosphoric acid (P ₂ O ₅)	4.5	0.90
Rock phosphate (floats) and low-grade slag—		
Total phosphoric acid (P ₂ O ₅)	1.5	0.30
Mixed fertilizer, acid phosphate, tc., containing no nitrogen—		
Insoluble phosphoric acid (P ₂ O ₅)	0.0	0.00

DATA RELATIVE TO THE 1947 INSPECTION

In Tables 3, 5, 7 and 9 the 1947 data are compared with other years and the comparisons are self-explanatory. Table 4 lists the sales of fertilizer by actual analysis as reported by the manufacturers and that estimated from tag sales. Although 13 different fertilizer ratios are recommended, sales of more than twice this number were reported indicating that unless more caution is observed shortly there will be a multiplicity of grades offered for sale which will not only lead to confusion but will eventually increase the cost of the fertilizer to the farmer.

In Tables 3 and 6 it will be noted that sales of potash salts, rock phosphate and complete fertilizers increased while raw materials like nitrogen salts and superphosphates decreased as did also the phosphate-potash mixtures.

Table 8 gives the standing of the manufacturers and should be used with Table 12 that lists the average of inspections that met the guarantee, and the individual results of all inspections that were found to be deficient. In case of a serious deficiency a refund is indicated.

TABLE 3—Classified Fertilizer Sales Since 1883 (From Tag Sales)

Year	Total tons	Tons nitrogen salts	Tons potash salts	Tons super-phosphate	Tons bone	Tons raw phosphate rock	phosphate potash Tons	Tons ammoniated super-phosphate	Tons complete
1883	8,000	.....	.....	.....	8,000	.....	.....	.....	.....
1888	10,000	.....	.....	.....^a	10,000	.....	.....^a	.....^a	.....^a
1893	38,000	.....	.....	1,000	14,000	.....	1,000	4,000	18,000
1895	45,000	.....	.....	1,000	15,000	.....	2,800	3,800	20,300
1897	49,400	.....	.....	7,200	13,950	50	1,550	5,200	21,450
1909	134,084	208 ¹	2,146	8,111	10,323	804	18,769	1,005	89,289
1914	219,180	123 ¹	3,586	12,878	7,748	2,400	40,451	1,184	144,126
1918	244,446	82 ²	.....	57,984	12,586	1,079	3,839	83,111	78,302
1923	195,702	1,550 ²	3,251	49,501	8,356	.....	35,394	4,309	91,220
1927	240,498	3,530 ²	5,200	32,041	4,456	719	41,785	520	151,112
1928	221,082	1,350 ²	1,700	26,997	1,907	968	40,451	.....	145,709
1929	221,193	3,140	1,800	21,655	2,650	844	45,000	62	214,010
1930	219,684	2,050	1,900	12,208	1,976	1,500	34,657	.....	163,136
1931	170,777	4,325	2,100	12,790	3,437	1,313	24,262	.....	119,841
1932	79,400	1,750	950	7,605	1,093	93	9,188	.....	57,626
1933	99,755	1,550	1,100	11,314	757	63	9,750	188	73,895
1934	152,824	2,400	2,200	18,201	3,647	437	17,906	406	105,501
1935	194,944	3,400	4,500	21,546	2,778	656	23,358	125	137,306
1936	254,108	3,881	5,550	23,876	2,094	1,469	36,660	31	179,525
1937	274,640	4,015	4,858	21,261	1,723	2,594	42,174	.....	197,084
1938	235,288	1,788	4,300	12,638	500	4,038	51,226	31	158,780
1939	263,145	3,307	5,350	14,469	468	5,438	65,250	.....	167,134
1940	280,980	3,064	2,063	13,477	823	6,075	79,029	146	175,404
1941 ⁴	330,672	3,344	2,375	16,147	206	5,450	97,974	118	203,096
1942 ⁴	419,416	3,411	3,938	33,425	632	8,200	250,453	.....	117,304
1943 ⁴	493,908	1,400	750	29,305	50	6,550	169,790	.....	234,695
1944	478,894	2,500	475	22,875	68	13,430 ⁵	128,757	318	308,216
1945	558,213	3,425	1,125	37,426	81	17,650	138,445	.....	357,884
1946	682,366	9,925	1,025	41,108	68	23,875	144,864	91	458,797
1947	800,151	7,450	10,575	30,658	.....	37,700	83,796	522	627,995

¹ Largely Nitrate of Soda.

² Nitrate of Soda and Ammonium Sulphate.

³ Light sales.

⁴ Corrected for redeemed tags.

⁵ Includes 320 tons Defluorinated Rock Phosphate.

TABLE 4—Tonnage of Fertilizer Sales in 1947

Analysis	From Tag Sales			From Manufacturers' Reports		
	Spring	Fall	Total	Spring	Fall	Total
A. Raw Materials						
1. Nitrogen Salts						
Ammonium Nitrate.....	1,450	2,175	3,625	4,580	1,916	6,476
Ammonium Sulphate.....	1,475	25	1,500	186	41	227
Cyanamid.....		1,500	1,500	1,835	1,106	2,941
Nitrate of Soda.....	350	225	575	364	2	366
Urea.....	250		250	197	40	237
2. Potash Salts						
0-0-60.....	350		350	245	8	253
0-0-50.....	9,750	325	10,075	776	95	871
0-0-25.....				47		47
0-0-21.5.....	100	50	150			
3. Rock Phosphate	15,500	22,200	37,700	19,080	8,650	27,740
4. Superphosphate						
0-45-0.....	9,348	261	9,610	6,111	2,157	8,268
0-30-0.....		1,304	1,304		457	457
0-20-0.....	5,114	13,195	18,309	6,447	6,239	12,686
0-19-0.....					119	119
0-18-0.....	522	913	1,435	827	399	1,226
B. Phosphate-Potash						
0-20-20.....	3,587	2,370	5,957	12,076	212	12,288
0-20-10.....	43		43	1,092		1,092
0-14-7.....	7,731	5,913	13,644	7,951	4,739	12,690
0-12-12.....	18,391	32,743	51,134	37,237	9,672	46,909
0-10-20.....	3,543	6,293	9,836	6,309	519	6,828
0-9-27.....	1,000	2,130	3,130	5,285	88	5,373
C. Nitrogen-Phosphate						
4-16-0.....	87		87			
16-20-0.....		435	435		40	40
E. Complete Mixtures						
10- 8- 6.....				20		20
10- 6- 4.....	174	543	717	376	36	412
9- 9- 9.....	348	108	456		11	11
9- 7- 3.....	22		22	3		3
8-24- 8.....	43		43	15		15
8-20- 5.....				5		5
8- 8- 8.....	2,081	2,730	4,820	4,168	494	4,662
8- 8- 4.....		43	43			
8- 7- 3.....	130	587	717		73	73
7-11- 5.....		217	217			
7- 8- 5.....			87	6		6
7- 6-19.....	87		87			
6-12- 6.....	174		174			
6-10- 4.....		217	217	138	23	161
6- 9- 7.....		43	43			
6- 8- 6.....	1,934	1,478	3,412	2,947	422	3,369
6- 8- 4.....		152	152	5		5
5-10-10.....	65	87	152	66		66
5-10- 5.....	152	781	933	2,929		2,929
5- 6-15.....	22		22	4		4
5- 5-10.....	217		217	2		2
4-24-12.....	2,217	1,087	3,304	2,337	695	3,032
4-16- 4.....		652	652			
4-12- 8.....	3,543	8,935	12,478	6,366	3,146	9,512
4-12- 4.....	5,500	4,196	9,696	898	404	1,272
4-11- 4.....	22		22			
4-10- 6.....		435	435	1	4	5
4- 8- 6.....	22		22			
3-18- 9.....	11,109	18,860	29,969	10,869	16,090	26,959
8-12-12.....	60,943	90,212	151,055	81,683	27,764	109,447
3-12- 8.....	3,291	5,213	8,504	3,122	1,181	4,303
3-12- 6.....	130	4,348	4,478			
3-10- 3.....	87		87	48		48
3- 9-18.....	2,674	7,456	10,130	11,505	213	11,718
3- 9- 6.....	2,608	1,326	3,934	3,472	654	4,126
2-12- 6.....	150,412	224,674	375,086	190,545	164,397	354,942
2- 8-10.....	5,652		5,652	4,442	1	4,443
F. Raw Bone.....				2		2
G. Steamed Bone.....				11	2	13
H. Miscellaneous.....	217	1,239	1,456	920	922	1,842
Total.....	332,476	467,675	800,151	437,510	252,931	690,441

TABLE 5—Tonnage, Retail Value, and Pounds per Ton of Plant Food

	Tons reported by manufacturer	Tonnage per year based on tag sales	Retail value dollars	Cost per ton, dollars	Pounds per ton actual plant food	Cost per pound plant food, dollars
1920	.....	230,184	8,499,256	36.92	318	0.116
1921	...	186,401	5,907,990	31.76	330	0.096
1922	.....	207,501	5,644,639	27.20	387	0.074
1923	.....	195,702	6,126,759	31.31	402	0.078
1924	.....	192,417	6,479,605	33.67	443	0.076
1925	.....	226,148	8,253,670	36.50	459	0.080
1926	.....	228,280	8,464,607	37.08	452	0.082
1927	.....	240,498	8,998,412	37.42	444	0.084
1928	.....	221,082	8,254,591	37.34	452	0.083
1929	237,590*	291,193	11,327,868	38.90	473	0.082
1930	246,009*	219,684	8,521,905	38.79	486	0.080
1931	188,496*	170,777	5,503,088	32.22	493	0.065
1932	100,581*	79,400	2,319,147	29.21	458	0.064
1933	105,289*	99,752	2,851,674	28.59	460	0.062
1934	140,526*	152,824	4,705,435	30.79	467	0.066
1935	190,067*	194,944	5,839,194	29.95	485	0.062
1936	245,537*	254,108	7,715,031	30.36	494	0.062
1937	226,887*	274,640	9,123,514	33.22	507	0.065
1938	220,967*	235,288	7,454,238	31.66	512	0.062
1939	210,420**	263,145	8,047,962	30.51	516	0.059
1940	251,218*	280,980	7,950,128	28.29	512	0.055
1941	273,386*	340,060	10,750,278	31.32	504	0.062
1942	334,593*	433,127	13,718,778	31.67	526	0.06
1941†	273,386*	330,672	10,458,221	31.63	504	0.062
1942†	334,593*	419,416	13,276,653	31.65	524	0.060
1943†	362,670*	493,908	15,881,585	31.91	488	0.065
1944	448,183 ¹	478,894	15,916,283	33.23	479	0.060
1945	528,947 ¹	558,213	19,244,015	34.48	492	0.070
1946	628,154 ¹	682,366	23,249,507	34.07	489	0.060
1947	690,441 ¹	800,151	30,331,055	37.91	497	0.076

* Estimated from manufacturers' reports and from tag sales of companies that did not report their tonnage sales.

** Corrected figure (210, 420) includes a 10,000 ton correction on (0-12-12) manufacturers' report.

† Corrected for redeemed tags.

¹ Not all companies reported. However, it is estimated that over 95% of the total sales is represented by the reports received.

TABLE 6—Tonnage of Low and High Grade Fertilizers (Estimated from Tag Sales)

	Superphosphate			Ammoniated Superphosphate			Superphosphate and Potash			Complete		
	Below 20	20-23	24 and above	Below 20	20-23	24 and above	Below 20	20-23	24 and above	Below 20	20-23	24 and above
*1917	41,894	715	.....	67,820	.....	.....	3,556	.....	.....	67,123	.....	.....
1918	56,828	1,156	.....	83,111	.....	.....	3,835	.....	.....	.....	.....	.....
1919	55,715	3,286	.....	55,577	.....	.....	15,310	.....	.....	92,277	.....	.....
1920	62,080	6,091	.....	48,173	.....	.....	23,600	.....	.....	80,868	.....	.....
1921	50,846	3,872	.....	19,121	.....	.....	22,485	.....	.....	74,085	.....	.....
1922	49,535	11,205	.....	10,389	.....	.....	30,694	.....	.....	101,930	.....	.....
1923	36,018	13,483	3,157	4,309	.....	.....	35,394	.....	.....	91,220	.....	.....
1924	29,720	16,601	7,232	1,340	.....	.....	402	30,145	.....	86,714	.....	.....
1925	24,314	20,813	12,000	1,244	.....	.....	125	32,663	.....	111,885	.....	.....
1926	18,650	19,731	10,000	282	.....	.....	7,212	14,827	9,999	96,865	29,792	4,872
1927	13,572	16,500	1,989	520	.....	.....	41,785	14,826	13,115	151,112	15,459	10,849
1928	8,928	13,082	4,987	.....	.....	.....	9,476	11,706	19,269	72,693	61,301	11,715
1929	6,991	12,826	1,838	62	.....	.....	3,919	19,558	21,525	80,735	114,584	18,691
1930	4,563	6,438	1,187	.....	.....	.....	1,844	19,146	13,667	47,133	98,921	17,082
1931	6,499	5,453	838	.....	.....	.....	1,457	10,844	12,862	36,491	72,069	11,281
1932	2,831	4,500	294	.....	.....	.....	594	6,022	2,572	21,094	32,532	4,000
1933	3,938	7,188	188	.....	.....	.....	656	4,375	4,826	26,588	41,944	5,169
1934	6,326	11,031	760	.....	.....	.....	626	8,717	8,564	36,409	62,351	7,737
1935	5,357	15,032	1,219	125	.....	.....	1,126	12,431	9,801	35,826	92,190	0,290
1936	4,282	18,469	1,181	31	.....	.....	1,125	16,048	19,496	37,520	127,661	14,344
1937	4,307	15,297	1,594	.....	.....	.....	749	20,380	21,045	33,348	146,741	16,995
1938	1,157	10,644	712	31	.....	.....	688	22,047	28,491	17,407	128,790	12,583
1939	1,750	11,844	875	.....	.....	.....	156	32,155	32,939	12,363	140,774	14,507
1940	618	12,000	759	146	.....	.....	29	20,273	58,727	10,498	129,226	35,680
1941	777	14,481	680	.....	.....	.....	.....	17,768	80,204	11,467	142,882	56,187
1942	6,255	25,811	287	.....	.....	.....	.....	76,108	174,345	1,445	69,589	47,836
1943	8,145	21,160	.....	.....	.....	.....	.....	40,250	129,040	6,016	220,850	56,847
1944	6,386	16,808	45	.....	318	.....	.....	7,213	64,478	271	212,889	95,156
1945	6,009	31,196	227	.....	.....	.....	.....	6,249	132,096	281	213,171	142,482
1946	3,136	34,177	3,795	.....	01	.....	.....	29,341	115,523	2,705	320,548	135,544
1947	1,435	18,309	10,914	.....	87	435	.....	13,652	70,144	4,978	409,607	213,409

* All data for the years 1917 to 1946 were reclassified.

TABLE 7—Plant Food in Tons*

Year	Nitrogen	Available phosphoric acid	Insoluble phosphoric acid	Total phosphoric acid (Bone)	Total phosphoric acid (Rock)	Potash
1920	1,685	24,529	3,345	3,109	776	3,462
1921	1,553	20,160	2,418	2,615	289	3,990
1922	1,832	24,970	2,791	2,778	9	6,032
1923	2,178	24,225	2,795	2,545	.....	8,176
1924	2,159	25,375	2,291	2,740	.....	10,064
1925	3,163	31,207	2,989	1,565	.....	12,927
1926	3,167	31,816	3,201	1,529	37	11,831
1927	3,823	31,210	2,916	1,141	208	14,098
1928	3,142	30,575	2,641	708	302	12,577
1929	5,979	39,852	3,632	730	274	18,359
1930	4,337	29,775	2,690	556	524	15,546
1931	4,077	22,232	2,138	1,023	463	12,201
1932	1,849	10,186	689	312	38	5,127
1933	2,163	13,211	765	229	20	6,568
1934	3,181	19,955	1,266	985	147	10,128
1935	4,657	25,339	1,644	823	221	15,080
1936	5,338	33,993	2,554	581	453	19,924
1937	5,836	36,529	2,420	479	819	23,533
1938	4,599	30,458	2,317	150	1,654	21,113
1939	4,992	34,384	2,113	153	1,848	24,460
1940	5,353	37,327	2,078	240	2,022	24,989
1941	6,523	44,246	2,519	88	1,760	30,575
1942	3,800	59,191	3,595	190	2,615	44,536
1941**	6,394	43,041	2,448	85	1,760	29,740
1942**	3,610	57,423	3,491	170	2,615	43,068
1943**	7,166	63,527	3,497	36	2,082	44,202
1944	8,818	56,798	4,555	67	3,450	40,712
1945	10,900	67,678	3,998	65	5,295	49,565
1946	12,445	84,534	5,806	77	7,377	56,263
1947	18,961	100,280	6,063	.....	8,400	65,101

* Calculated from tag sales and inspection reports.

** Corrected from redeemed tags.

TABLE 8—Standing of Manufacturers Determined by Inspection of 1947

Manufacturers	Numbers of samples reported	Equal to guarantee in every particular		Equal in value guarantee		Number deficient but within 10 percent of value of guarantee	Number deficient and not within 10 percent of value of guarantee
		No.	%	No.	%		
American Ag. Chemical Co., New York, N. Y.	36	15	41	33	91	2	1
American Cyanamid Co., New York, N. Y.	5	4	80	4	80	1	
Armour Fertilizer Works, Chicago Heights, Ill.	199	112	56	183	92	16	
Associated Cooperative, Inc., Sheffield, Ala.	12	12	100	12	100		
Atkins & Durbrow, Inc., New York, N. Y.	3	3		3			
Wayne Bash Feed Company, The, Fort Wayne, Ind.	2			2			
Buhner Fertilizer Company, The, Seymour, Ind.	75	37	49	63	84	12	
Chilean Nitrate Sales Corporation, New York, N. Y.	1	1		1			
Cleveland Agricultural Chemical Company, Lockland, Ohio	1	1		1			
Consolidated Chemical Company, Louisville, Ky.	1	1		1			
Darling & Company, Chicago, Ill.	75	24	32	62	82	13	
Davison Chemical Corporation, Baltimore, Md.	1	1		1			
Davison Chemical Corporation, Welch Div., Columbus, Ohio	11	10	90	11	100		
Davison Chemical Corporation, Hopkins Fert. Div., New Albany, Ind.	108	67	62	107	99	1	
Diamond Fertilizer Company, Sandusky, Ohio	8	2	25	4	50	4	
E. I. DuPont de Nemours, Wilmington, Del.	2	2		2			
Ellis Chemical Company, Inc., New Albany, Ind.	53	19	35	48	90	5	
Excell Laboratories, The, Chicago, Ill.	1	1		1			
Farmers Fertilizer Company, The, Columbus, Ohio	8	8	75	8	100		
Federal Chemical Company, Louisville, Ky.	71	36	50	63	89	8	
Ford Motor Company, Dearborn, Mich.	2	2		2			
Foster Kendall Company, Carmel, Ind.	3	2		3			
G-M Chemical Company, Columbus, Ohio	1	1		1			
Goulard & Olena, Skwillman, N. J.	7	3		5		2	
Hoffman, Inc., A. H., Landsville, Pa.	7	7	100	7	100		
Hydroponic Chemical Company, Inc., New York, N. Y.	2	2		2			
Indiana Farm Bur. Coop. Ass'n, Inc., Indianapolis, Ind.	208	175	59	269	90	28	1
International Minerals & Chem. Corp., Chicago Heights, Ill.	29	14	41	27	93	2	
International Minerals & Chem. Corp., Cincinnati, Ohio	26	17	65	25	96	1	
Robln Jones, The, Nashville, Tenn.	1	1		1			
Kahn Brothers Co., Chicago, Ill.	1			1			
Kingsbury & Company, Inc., Indianapolis, Ind.	114	67	58	106	93	8	
Kova Fertilizer Company, The, Greensburg, Ind.	27	22	81	27	100		
Longaker Mills, Inc., Waterloo, Ind.	3	1		2		1	
J. A. McCarty Seed Company, Evansville, Ind.	3	2		2		1	

Manufacturers	Number of samples reported	Equal to guarantee in every particular		Equal in value guarantee		Number deficient but within 10 percent of value of guarantee	Number deficient and not within 10 percent of value of guarantee
		No.	%	No.	%		
Midwestern Phosphate Corporation, Madison, Wis.	3	3		3			
National Chemical Company, Louisville, Ky.	4	3	75	4	100		
Norris Fertilizer Company, The, Rushville, Ind.	23	13	56	22	95	1	
Norris & Son, Inc., V. W., Rushville, Ind.	7	3	42	7	100		
North American Fertilizer Company, Louisville, Ky.	28	19	82	25	89		
Plant Marvel Laboratories, Chicago, Ill.	2	2		2			
Plantabbs Company, Baltimore, Md.	1			1			
Price Chemical Company, The, Louisville, Ky.	23	18	78	23	100		
Pulverized Manure Company, The, Chicago, Ill.	3	1		3			
Ralston Purina Company, St. Louis, Mo.	5	1	20	4	80	1	
E. Raub & Sons Fertilizer Company, Indianapolis, Ind.	121	72	60	109	90	12	
F. S. Boyster Guano Company, Indianapolis, Ind.	81	60	85	81	100		
Ruhm Phosphate & Chemical Company, Mt. Pleasant, Tenn.	2	2		2			
Schrock Fertilizer Service, Congerville, Ill.	8	6	75	6	75	2	
O. M. Scott & Sons Company, The, Marysville, Ohio	2			2			
Sewerage Commission of the City of Milwaukee, Milwaukee, Wis.	4	4	100	4	100		
Smith Agricultural Chemical Co., The, Indianapolis, Ind.	106	43	40	98	92	8	
Southern Ac'd & Sulphur Company, Inc., St. Louis, Mo.	9	9	100	9	100		
Spencer Chemical Company, The, Pittsburg, Kansas.	3	3		3			
Standard Wholesale Phosphate & Acid Works, Inc., Baltimore, Md.	4	2	50	4	100		
Stelnkamp, Hugo, Holland, Ind.	6	3	50	5	83	1	
Stockdale Fertilizer Company, Morris, Ill.	1	1		1			
Swift & Company Fertilizer Works, Chicago, Ill.	86	46	53	79	92	7	
Swift & Company Fertilizer Works, Hammond, Ind.	10	2	20	9	90	1	
Tennessee Corporation, Lockland, Ohio	112	64	57	98	87	13	1
Tennessee Corporation, New Albany, Ind.	76	41	53	57	75	19	
Virginia-Carolina Chemical Corporation, Cincinnati, Ohio	88	59	67	78	88	10	
White County Farm Bureau Coop., Monticello, Ind.	1			1			
Wilson & Company, Chicago, Ill.	1			1			
F. H. Woodruff & Sons, Milford, Conn.	1	1		1			
Woodrille Lime Products Company, Toledo, Ohio	4			4	100		
Totals	2,024	1,158		1,832		189	3

TABLE 9—Summary of Inspection for the Past Forty-six Years

	Number of samples reported	Number equal to guarantee in every particular	Number equal in value of guarantee	Number deficient but within 10 percent of value of guarantee	Number deficient but not within 10 percent of value of guarantee
1902	679	335	564	93	22
1903	674	286	492	139	43
1904	643	248	451	148	44
1905	734	312	528	158	48
1906	879	374	642	176	61
1907	793	265	481	210	102
1908	901	391	683	171	47
1909	969	417	720	215	34
1910	1,118	441	834	242	42
1911	1,095	527	896	180	19
1912	1,220	636	1,034	175	11
1913	1,204	714	1,021	178	5
1914	1,396	727	1,152	239	5
1915	1,368	684	1,145	214	9
1916	1,367	870	1,183	168	16
1917	919	622	830	76	13
1918	1,285	888	1,142	121	22
1919	1,401	936	1,227	141	32
1920	1,491	944	1,267	188	27
1921	1,314	754	1,070	227	17
1922	1,216	812	1,071	132	13
1923	1,325	970	1,214	108	3
1924	1,439	1,072	1,340	94	5
1925	1,442	1,019	1,329	111	2
1926	1,225	798	1,033	183	9
1927	1,450	909	1,277	153	10
1928	1,437	865	1,283	144	9
1929	1,378	854	1,217	155	6
1930	1,421	1,090	1,320	89	10
1931	1,396	1,100	1,315	74	7
1932	1,138	935	1,053	80	5
1933	1,153	829	1,064	84	5
1934	1,425	1,097	1,311	109	5
1935	1,481	1,275	1,399	77	5
1936	1,493	1,259	1,423	60	10
1937	1,578	1,323	1,488	83	7
1938	1,501	1,278	1,396	97	8
1939	1,546	1,306	1,469	70	7
1940	1,576	1,200	1,459	116	1
1941	1,630	1,131	1,468	159	3
1942	1,568	1,178	1,359	203	6
1943	1,573	1,241	1,510	57	6
1944	1,652	634	1,151	491	10
1945	1,807	859	1,462	335	10
1946	1,866	1,250	1,762	109	3
1947	2,024	1,158	1,832	189	3
Totals	59,740	38,713	52,067	7,111	787

TABLE 10—Fertilizer Tonnage and Estimated Retail Value for 1947

Class of Fertilizer	Spring Tons	Fall Tons	Total Tons	Retail Value
2. Superphosphate, 18 and 19 units.....	522	913	1,435	\$38,745
3. Superphosphate, 20 to 23 units.....	5,114	13,195	18,309	556,593
4. Superphosphate, 24 units and above.....	9,349	1,565	10,914	648,291
5.* Ammoniated superphosphate, 20 to 23 units..	87	.....	87	3,045
6.* Ammoniated superphosphate, 24 units and above	.....	435	435	24,855
10. Superphosphate and potash, 20 to 23 units ..	7,739	5,913	13,652	465,533
10a. Superphosphate and potash, 24 units and above	26,564	43,580	70,144	2,658,467
12. Complete, 14 to 19 units.....	2,891	2,087	4,978	187,172
13. Complete, 20 to 23 units.....	167,549	242,058	409,607	14,418,166
13a. Complete, 24 units and above.....	83,219	130,190	213,409	9,411,336
21. Rock phosphate	15,500	22,200	37,700	757,770
22. Nitrogen salts	3,525	3,925	7,450	606,600
23. Potash salts	10,200	375	10,575	581,682
31. Miscellaneous.....	217	1,239	1,456	72,800
Totals.....	332,476	467,675	800,151	\$30,331,055

* No samples taken—value estimated.

TABLE 11—Summary of Inspection on the Basis of Composition and Retail Value for 1947

Class of Fertilizer	Number of Sample	Nitrogen (N) average percent		Available phosphoric acid (P ₂ O ₅) average percent		Insoluble phosphoric acid (P ₂ O ₅) average percent		Total phosphoric acid (P ₂ O ₅) average percent		Potash (K ₂ O) soluble in water average percent		Comparative value, per ton, dollars		Average retail price, per ton, dollars	Comparison retail price and found comparative value per ton, dollars	Range in retail price per ton, dollars
		Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found			
2. Superphosphate, 18 and 11 units	2	.....	.....	18.0	18.4	0.5	0.8	.....	.....	.....	.....	32.50	28.00	27.00	+ 4.00	27.00
3. Superphosphate, 20 to 22 units	63	.....	.....	20.0	20.7	0.4	1.0	.....	.....	.....	.....	35.00	25.88	30.43	+ 4.55	24.70-36.15
4. Superphosphate, 24 units and above	48	.....	.....	44.1	43.8	.....	0.4	.....	.....	.....	.....	55.13	54.75	59.41	+ 4.66	43.95-64.60
10. Superphosphate and potash, 20 to 23 units	68	.....	.....	14.0	14.4	1.0	1.7	.....	.....	7.0	7.2	24.50	25.20	34.11	+ 8.91	29.80-35.95
10a. Superphosphate and potash, 24 units and above	202	.....	.....	13.1	13.2	.6	.8	.....	.....	14.5	15.1	30.88	31.61	37.91	+ 6.30	29.80-61.18
12. Complete 14 to 19 units	15	4.4	4.3	8.6	8.8	0.9	0.6	.....	.....	5.5	5.8	25.32	26.58	37.57	+10.99	33.90-45.40
13. Complete 20 to 23 units	89	2.3	2.3	11.8	11.9	0.5	0.7	.....	.....	5.7	5.8	25.20	25.49	35.24	+ 9.75	31.19-60.00
13a. Complete 24 units and above	474	3.3	3.3	14.3	14.5	0.9	1.0	.....	.....	10.9	11.1	35.65	36.13	44.13	+ 8.00	39.04-65.00
21. Rock phosphate	10	.....	.....	.....	.....	31.7	32.2	.....	.....	.....	.....	9.51	9.66	20.18	+10.52	20.00-20.55
22. Nitrogen salts	33	28.5	29.1	.....	.....	.....	.....	.....	.....	.....	.....	57.00	58.20	68.06	+ 9.86	56.50-83.37
23. Potash salts	7	.....	.....	.....	.....	.....	.....	.....	.....	54.3	54.4	54.80	54.40	55.09	+ 0.69	49.83-71.00
31. Miscellaneous	23	2.6	2.9	.....	.....	.....	.....	1.2	2.1	1.6	2.7	7.64	9.97	50.00	+41.03	50.00

TABLE 12—Detailed Report of Individual Inspections in 1947

Manufacturer and Brand	Total Nitrogen	Phosphoric Acid		Soluble Potash	Refund
		Avail.	Insol.		
American Agricultural Chemical Company, The New York City, New York					
18% Normal Superphosphate.....g	.....	18.0	0.5	.....	.....
2 Samples passed (av.)	.....	18.4	0.8	.....	.....
A A Quality Fertilizer 0-12-12.....g	.....	12.0	0.5	12.0	.....
1 Sample passed	.....	12.2	0.6	12.9	.....
A A Quality Fertilizer 0-14-7.....g	.....	14.0	0.5	7.0	.....
1 Sample deficient	.....	14.5	0.8	6.9	.....
Agrico Phosphate and Potash 0-14-7.....g	.....	14.0	0.5	7.0	.....
1 Sample deficient	.....	13.6	1.6	7.0	.....
Agrico for Wheat 2-12-6.....g	2.0	12.0	0.5	6.0	.....
5 Samples passed (av.)	2.0	12.2	1.3	6.4	.....
4 Samples deficient	1.9	12.5	0.9	6.0	.....
	1.9	12.1	1.2	6.5	.....
	2.0	12.0	1.2	5.8	.....
	2.0	11.8	1.8	5.9	.....
Agrico for Grain 2-12-6.....g	2.0	12.0	0.5	6.0	.....
1 Sample deficient	2.0	11.5	1.7	6.3	.....
Agrico for Corn 2-12-6.....g	2.0	12.0	0.5	6.0	.....
3 Samples passed (av.)	2.1	12.4	1.4	6.2	.....
4 Samples deficient	2.1	11.8	1.0	6.2	.....
	2.1	11.4	2.0	6.3	.....
	2.0	11.2	2.0	6.1	\$6.00
	2.0	12.4	1.2	5.6	.....
A A Quality Fertilizer 2-12-6.....g	2.0	12.0	0.5	6.0	.....
5 Samples deficient	2.1	11.8	1.7	6.3	.....
	1.9	12.8	0.8	6.1	.....
	2.1	11.7	2.1	6.1	.....
	1.8	12.4	0.6	6.3	.....
	1.9	12.5	0.8	6.3	.....
Agrico for Midwest 3-12-12.....g	3.0	12.0	0.5	12.0	.....
1 Sample passed	3.0	12.0	1.6	12.6	.....
1 Sample deficient	3.1	11.7	1.7	12.5	.....
Agrico for Corn 3-12-12.....g	3.0	12.0	0.5	12.0	.....
1 Sample deficient	3.1	11.8	1.3	12.1	.....
Agrico for Lawns, Trees and Shrubs 4-12-4.....g	4.0	12.0	0.5	4.0	.....
1 Sample passed	4.1	12.5	2.0	4.4	.....
Agrico for Gardens 4-12-4 (Victory Garden Fertilizer— For Food Production only).....g	4.0	12.0	0.5	4.0	.....
1 Sample passed	4.1	12.7	1.4	4.5	.....
Agrico for Potatoes 4-12-8.....g	4.0	12.0	0.5	8.0	.....
1 Sample deficient	5.9	11.6	1.3	9.3	.....
Agrico for Tobacco 4-12-8.....g	4.0	12.0	0.5	8.0	.....
1 Sample passed	4.0	12.0	1.0	8.7	.....
1 Sample deficient	2.0	14.2	0.6	8.5	\$38.25
Agrico for Broadleaf Evergreens 6-10-4.....g	6.0	10.0	0.5	4.0	.....
1 Sample deficient	6.4	9.6	1.7	4.2	.....
American Cyanamid Company New York City, New York					
20.6% "Aero" Cyanamid Granular.....g	20.6	.....	.....	.....	.....
4 Samples passed (av.)	20.8	.....	.....	.....	.....
1 Sample deficient	20.3	.....	.....	.....	.....
Armour Fertilizer Works Chicago Heights, Illinois					
Armour's Big Crop 20% Superphosphate.....g	.....	20.0	0.5	.....	.....
8 Samples passed (av.)	.....	21.0	1.2	.....	.....
1 Sample deficient	.....	19.7	1.3	.....	.....
Armour's Big Crop 0-12-12 Fertilizer.....g	.....	12.0	0.5	12.0	.....
3 Samples passed (av.)	.....	12.2	0.9	12.2	.....
7 Samples deficient	.....	11.8	1.0	11.7	.....
	.....	12.0	0.7	11.8	.....
	.....	11.8	0.8	12.0	.....
	.....	13.2	1.5	11.8	.....
	.....	12.3	0.8	11.7	.....
	.....	13.0	0.9	11.8	.....
	.....	12.0	0.8	11.9	.....

TABLE 12—Continued

Manufacturer and Brand	Total Nitrogen	Phosphoric Acid		Soluble Potash	Refund
		Avail.	Insol.		
Armour's Big Crop 0-14-7 Fertilizer.....g	14.0	.....	7.0	.....	.....
4 Samples passed (av.)	14.4	1.0	7.7	.....	.....
9 Samples deficient	13.7	1.7	7.5	.....	.....
	14.9	1.2	6.7	.....	.....
	13.6	1.4	7.6	.....	.....
	13.5	1.4	8.1	.....	.....
	13.8	1.0	7.4	.....	.....
	13.4	1.1	7.0	.....	.....
	14.3	1.2	6.9	.....	.....
	13.6	1.3	7.3	.....	.....
	13.7	1.4	7.0	.....	.....
Armour's Pulverized Sheep Manure.....g	1.5	.....	1.0*	2.5	.....
1 Sample passed	1.7	.....	1.8*	4.8	.....
1 Sample deficient	1.6	.....	1.3*	2.3	.....
Armour's Big Crop 2-12-6 Fertilizer.....g	2.0	12.0	.....	6.0	.....
78 Samples passed (av.)	2.1	12.4	1.1	6.2	.....
47 Samples deficient	1.9	12.7	1.0	5.8	.....
	1.8	12.0	0.7	6.3	.....
	1.8	11.6	1.2	6.2	.....
	1.8	12.0	0.9	6.1	.....
	1.8	12.6	0.6	6.2	.....
	1.8	12.3	0.9	5.9	.....
	1.9	12.2	0.8	6.0	.....
	1.9	12.3	0.6	6.1	.....
	2.2	11.6	1.0	7.1	.....
	1.9	12.3	1.0	6.1	.....
	1.9	12.0	0.9	6.1	.....
	1.8	12.0	1.2	6.1	.....
	1.9	12.1	1.1	6.0	.....
	1.8	12.2	1.1	6.6	.....
	1.9	12.0	1.1	6.1	.....
	1.9	12.1	0.9	6.5	.....
	2.0	12.4	1.2	5.8	.....
	1.9	12.5	0.9	6.1	.....
	2.0	12.5	1.2	5.8	.....
	2.1	12.2	0.7	5.9	.....
	1.9	12.1	1.4	6.3	.....
	2.4	11.6	1.0	7.7	.....
	1.8	12.7	1.4	6.1	.....
	1.9	11.5	1.1	6.6	.....
	2.0	11.1	1.8	6.5	\$45.20
	2.0	11.8	1.0	5.9	.....
	1.9	11.6	1.0	6.3	.....
	2.0	12.0	1.2	5.7	.....
	1.9	12.4	1.1	6.0	.....
	2.1	11.7	0.9	6.0	.....
	2.0	11.5	1.2	5.9	.....
	2.1	12.0	1.0	5.8	.....
	2.0	11.7	1.5	6.2	.....
	1.9	12.1	1.9	6.2	.....
	1.9	12.1	1.3	6.2	.....
	2.0	12.3	0.9	5.8	.....
	2.1	11.8	1.3	6.5	.....
	2.0	11.9	1.2	6.3	.....
	2.0	11.8	1.2	6.2	.....
	2.0	11.7	1.4	6.1	.....
	2.0	11.7	1.5	6.1	.....
	2.3	11.7	1.7	6.2	.....
	1.9	12.7	1.2	6.1	.....
	1.8	12.1	1.3	6.2	.....
	1.9	11.7	1.6	6.3	.....
	1.8	12.0	1.6	6.3	.....
	1.8	12.2	1.3	6.7	.....

* Total phosphoric acid.

TABLE 12—Continued

Manufacturer and Brand	Total Nitrogen	Phosphoric Acid		Soluble Potash	Refund
		Avail.	Insol.		
Armour's Big Crop 3-12-12 Fertilizer.....g	3.0	12.0	.....	12.0	.....
10 Samples passed (av.)	3.0	12.4	0.9	12.2	.....
17 Samples deficient	2.9	12.0	0.9	12.4	.....
	2.9	11.7	0.8	13.2	.....
	3.0	11.7	0.7	12.8	.....
	2.7	12.0	1.0	12.1	.....
	3.0	12.3	0.5	11.9	.....
	3.0	12.0	1.2	12.4	.....
	2.9	12.0	1.2	12.5	.....
	2.6	12.0	1.2	10.0	\$28.00
	2.9	11.9	0.9	12.0	.....
	3.1	12.1	0.6	11.8	.....
	3.0	12.1	1.2	11.5	.....
	2.8	11.4	1.9	12.1	\$11.50
	2.8	12.1	0.9	12.6	.....
	2.9	12.8	1.4	11.9	.....
	3.0	13.6	1.0	11.9	.....
	3.0	12.3	1.6	11.3	.....
	3.1	12.7	0.9	11.4	.....
Armour's Lawn and Garden Fertilizer 4-12-4.....g	4.0	12.0	.....	4.0	.....
2 Samples passed (av.)	4.0	12.4	0.9	4.1	.....
1 Sample deficient	3.0	12.0	1.1	4.4	.....
Armour's Big Crop High Grade					
Burley Tobacco Grower 4-12-8.....g	4.0	12.0	.....	8.0	.....
1 Sample passed	4.2	12.1	1.1	8.2	.....
1 Sample deficient	4.0	11.6	1.0	8.4	.....
Armour's Big Crop 4-12-8 Fertilizer.....g	4.0	12.0	.....	8.0	.....
5 Samples passed (av.)	4.0	12.1	1.3	8.6	.....
3 Samples deficient	4.7	11.0	0.7	7.7	.....
	4.0	11.6	1.0	8.6	.....
	3.9	12.2	1.2	7.8	.....
Associated Cooperatives, Inc., Birmingham, Alabama					
Ammonium Nitrate Fertilizer					
12 Samples passed (av.)	32.5	.....	.....	.....	.....
1 Sample deficient	33.5	.....	.....	.....	.....
Clark's & Durbrow, Inc., New York City, New York					
Improved Driconure					
3 Samples passed (av.)	2.0	.....	1.0*	1.0	.....
1 Sample deficient	3.3	.....	2.7*	2.1	.....
Clark Feed Company, The Wayne, Fort Wayne, Indiana					
"Bash's Special Lawn and Grass Fertilizer"					
2 Samples deficient	10.0	6.0	1.5	4.0	.....
	10.0	6.1	0.6	4.3	.....
	10.3	6.0	1.3	3.9	.....
Buhner Fertilizer Company, The Bloomington, Indiana					
60% Muriate of Potash					
2 Samples passed (av.)	.....	.....	.....	60.0	.....
1 Sample deficient	.....	.....	.....	60.4	.....
0-9-27	.....	9.0	.....	27.0	.....
Buhner's 0-12-20	.....	9.1	0.6	28.4	.....
2 Samples passed (av.)	.....	10.0	.....	20.0	.....
1 Sample deficient	.....	10.2	0.4	20.2	.....
Buhner's 0-12-12	.....	12.0	.....	12.0	.....
9 Samples passed (av.)	.....	12.6	0.4	12.7	.....
6 Samples deficient	.....	11.7	0.7	13.1	.....
	.....	13.0	0.8	11.4	.....
	.....	12.4	0.8	11.8	.....
	.....	12.3	0.8	11.7	.....
	.....	12.1	0.7	11.9	.....
Buhner's 0-20-20	.....	20.0	.....	20.0	.....
1 Sample deficient	.....	20.0	.....	20.0	.....
Buhner's 2-12-6	.....	19.5	0.3	18.5	\$51.12
13 Samples passed (av.)	2.0	12.0	.....	6.0	.....
1 Sample deficient	2.0	12.4	0.6	6.4	.....

* Total phosphoric acid.

TABLE 12—Continued

Manufacturer and Brand	Total Nitrogen	Phosphoric Acid		Soluble Potash	Refund	
		Avail.	Insol.			
16 Samples deficient	1.9	12.2	0.4	6.0	.....
	2.2	11.7	0.8	6.5	.....
	2.0	11.8	0.2	6.4	.....
	2.0	11.4	0.4	6.7	.....
	3.2	10.8	0.2	13.5	\$14.91	
	1.8	12.0	0.4	7.1	.....
	1.9	12.0	0.2	5.8	.....
	2.1	11.7	0.9	6.9	.....
	2.0	11.7	0.6	6.6	.....
	2.0	11.7	0.4	6.4	.....
	1.8	12.5	0.9	5.8	.....
	1.8	12.2	0.7	5.9	.....
	1.9	13.2	0.7	6.2	.....
	1.9	11.7	1.0	6.1	.....
	2.0	12.4	0.9	5.9	.....
	2.0	12.0	1.0	5.8	.....
	Buhner's 3-9-18	3.0	9.0	18.0
	2 Samples passed (av.)	2.2	9.0	0.2	19.2
	1 Sample deficient	2.9	10.5	0.5	16.7	\$9.20
	Buhner's 3-12-12	3.0	12.0	12.0
6 Samples passed (av.)	3.0	12.4	0.5	12.2	.....
12 Samples deficient	3.0	11.9	1.0	11.8	.....
	2.9	12.0	0.5	12.0	.....
	3.0	11.6	0.8	12.1	.....
	3.0	11.7	0.5	18.3	.....
	2.9	12.0	0.4	12.7	.....
	3.0	11.8	0.5	12.0	.....
	3.0	11.5	0.7	11.8	.....
	3.2	12.1	0.5	11.8	.....
	2.5	11.6	0.6	13.6	\$6.00	
	2.8	13.0	0.6	11.7	.....
	2.9	12.0	7.1	12.2	.....
	2.9	13.0	0.8	13.0	.....
Buhner's 3-18-9	3.0	18.0	.....	9.0	.....
1 Sample passed	3.0	18.0	0.5	0.7	.....
3 Samples deficient	3.1	17.6	0.5	9.3	.....
	2.9	17.8	0.2	9.8	.....
	4.0	15.8	0.3	8.6	\$6.43	
Ohilean Nitrate Sales Corporation New York City, New York						
Old Style Chilean Nitrate of Soda	16.0	.....	.....	.....	.....
1 Sample passed	16.1	.....	.....	.....	.....
Cleveland Agricultural Chemical Company, The Lockland, Ohio						
Cleveland Quality 4-12-8 Fertilizer	4.0	12.0	.....	8.0	.....
1 Sample deficient	4.0	12.1	0.8	7.8	.....
Consolidated Chemical Company Louisville, Kentucky						
Camel Brand Three-Twelve-Twelve	3.0	12.0	.....	12.0	.....
1 Sample passed	3.4	13.4	0.5	13.0	.....
Darling & Company Chicago, Illinois						
Darling's Fourteen Seven 0-14-7 .....	.....	14.0	.....	7.0	.....
2 Samples passed (av.)	.....	14.9	0.5	7.0	.....
1 Sample deficient	.....	14.0	1.8	5.7	\$26.00
Darling's Crop King	2.0	12.0	0.5	6.0	.....
20 Samples passed (av.)	2.0	12.6	0.9	6.4	.....
41 Samples deficient	2.0	11.6	1.4	5.6	.....
	1.8	11.7	1.1	6.1	.....
	2.0	11.7	1.3	5.5	.....
	2.1	12.2	1.0	5.7	.....
	1.9	11.7	0.7	6.1	.....
	1.9	11.7	1.5	5.8	.....
	1.8	12.0	0.8	6.1	.....

TABLE 12—Continued

Manufacturer and Brand	Total Nitrogen	Phosphoric Acid		Soluble Potash	Refund
		Avail.	Insol.		
	1.9	11.8	1.0	6.6	.....
	2.0	12.0	1.4	5.2	.....
	1.7	12.0	0.9	5.6	\$30.00
	2.0	12.5	0.8	5.4	.....
	1.8	13.7	0.5	6.3	.....
	1.6	12.3	1.1	5.3	\$45.00
	1.7	12.2	1.0	6.1	.....
	1.8	12.9	0.9	5.0	\$15.00
	1.7	12.3	1.5	6.3	.....
	1.6	13.0	0.9	7.0	.....
	1.0	13.6	0.3	6.2	.....
	1.9	12.3	1.5	6.1	.....
	1.9	13.7	1.0	7.0	.....
	1.7	13.0	0.8	6.3	.....
	2.0	12.8	0.8	5.7	.....
	2.0	13.0	0.8	5.8	.....
	2.0	12.8	1.1	5.9	.....
	1.9	13.2	0.7	6.0	.....
	1.5	13.0	1.1	6.0	\$30.00
	2.0	12.7	0.9	5.6	.....
	2.0	13.0	0.6	5.6	.....
	1.8	12.8	1.0	5.4	\$18.50
	1.8	13.0	0.8	5.8	.....
	1.8	12.8	1.3	5.3	\$33.00
	1.9	10.7	0.7	6.0	\$8.15
	2.3	12.1	0.9	5.9	.....
	1.9	12.8	0.8	5.7	.....
	1.9	12.3	1.2	6.0	.....
	1.9	12.4	0.7	5.6	.....
	2.0	12.4	0.8	5.6	.....
	1.9	12.0	1.0	5.5	.....
	1.9	13.0	0.6	5.8	.....
	1.8	12.9	1.0	6.0	.....
	1.8	12.9	0.8	5.8	.....
Darling's Three-Twelve-Eight 3-12-8.....E	3.0	12.0	.....	8.0	.....
2 Samples passed (av.)	3.1	13.4	1.6	8.2	.....
4 Samples deficient	2.7	12.4	0.8	8.4	.....
	2.6	12.8	1.2	7.7	.....
	3.4	11.9	1.4	8.8	.....
	3.0	12.4	2.1	7.3	.....
Darling's Sure Winner 3-12-12.....E	3.0	12.0	.....	12.0	.....
3 Samples deficient	2.6	13.1	1.0	10.5	\$23.00
	2.0	12.4	2.1	10.1	117.00
	2.7	12.3	1.3	12.4	.....
Darling's Field Marshall 4-12-4.....E	4.0	12.0	.....	4.0	.....
2 Samples deficient	3.7	12.0	0.8	4.5	.....
Davison Chemical Corporation Baltimore, Maryland	3.8	11.4	2.3	4.9	.....
Hopkins Old Time Ammonium Nitrate.....E					
1 Sample passed	32.5	.....	.....	.....	.....
Davison Chemical Corporation Welch Division Columbus, Ohio	33.6	.....	.....	.....	.....
Higrade 0-20-0.....E		20.0	.....	.....	.....
4 Samples passed (av.)	.....	20.6	0.8	.....	.....
Higrade 2-12-6.....E	2.0	12.0	.....	6.0	.....
6 Samples passed (av.)	2.1	12.3	1.3	6.2	.....
1 Sample deficient	2.0	12.1	1.2	5.8	.....
Davison Chemical Corporation Hopkins Fertilizer Division New Albany, Indiana		20.0	1.0	.....	.....
Hopkins Old Time Twenty Percent Superphosphate.....E		20.8	1.5	.....	.....
1 Sample passed	.....	14.0	1.0	7.0	.....
Hopkins Old Time Fourteen-Seven.....E		14.3	1.4	7.4	.....
3 Samples passed (av.)	.....	13.6	1.2	8.2	.....
2 Samples deficient	.....	14.5	1.4	6.8	.....

TABLE 12—Continued

Manufacturer and Brand	Total Nitrogen	Phosphoric Acid		Soluble Potash	Refund
		Avail.	Insol.		
Hopkins Old Time Two-Twelve-Six.....g	2.0	12.0	1.0	6.0	.....
49 Samples passed (av.)	2.1	12.4	1.0	6.3	.....
25 Samples deficient	2.3	11.9	1.2	6.7	.....
	2.0	12.1	1.2	5.8	.....
	2.2	13.2	1.0	5.8	.....
	2.6	13.0	1.4	5.7	.....
	2.1	12.4	1.4	5.8	.....
	2.1	11.6	1.4	6.4	.....
	2.2	12.0	0.6	5.8	.....
	2.1	11.7	0.5	6.4	.....
	2.0	12.5	1.1	5.6	.....
	1.8	12.8	0.8	6.7	.....
	1.9	13.0	0.8	6.0	.....
	1.9	12.4	1.5	6.0	.....
	2.0	11.9	1.1	6.3	.....
	1.8	12.8	0.6	5.8	.....
	1.8	12.3	0.8	6.4	.....
	1.9	12.8	1.0	6.1	.....
	2.0	12.6	1.1	5.8	.....
	1.9	12.7	1.2	6.3	.....
	2.1	12.3	1.1	5.8	.....
	1.9	12.7	1.0	5.8	.....
	1.8	12.5	1.1	6.3	.....
	1.9	12.5	0.8	6.2	.....
	1.9	12.7	1.2	6.4	.....
	1.9	12.7	0.9	6.5	.....
	1.8	12.9	0.9	6.0	.....
Hopkins Old Time 3-12-12.....g	3.0	12.0	1.0	12.0	.....
4 Samples passed (av.)	3.1	12.3	0.9	12.3	.....
10 Samples deficient	2.8	12.1	1.0	12.7	.....
	3.4	12.3	0.8	11.7	.....
	2.8	12.0	1.2	13.3	.....
	2.9	12.3	1.0	12.8	.....
	2.8	12.5	1.0	12.0	.....
	3.1	13.1	1.0	10.7	\$1.96
	3.0	11.7	1.0	13.1	.....
	3.0	13.1	1.3	11.9	.....
	3.1	12.3	1.1	11.8	.....
	2.9	12.2	1.1	12.4	.....
Fertilizer 4-12-8.....g	4.0	12.0	1.0	8.0	.....
8 Samples passed (av.)	4.1	12.3	1.2	8.3	.....
2 Samples deficient	3.6	12.2	1.2	8.1	.....
	3.8	13.2	0.7	8.7	.....
Hopkins Old Time 8-8-8.....g	8.0	8.0	1.0	8.0	.....
2 Samples passed (av.)	8.2	8.6	0.6	9.1	.....
2 Samples deficient	7.9	8.6	0.6	9.3	.....
	8.1	8.0	0.5	8.7	.....
Diamond Fertilizer Company Sandusky, Ohio					
Diamond 0-10-20.....g	.....	10.0	.....	20.0	.....
1 Sample deficient	.....	10.3	0.4	19.6	.....
Diamond Twelve-Twelve.....g	.....	12.0	.....	12.0	.....
1 Sample deficient	.....	10.7	2.2	12.4	\$22.82
Diamond Fourteen-Seven.....g	.....	14.0	.....	7.0	.....
1 Sample deficient	.....	14.0	0.6	6.7	.....
Diamond Twenty-Twenty.....g	.....	20.0	.....	20.0	.....
1 Sample deficient	.....	18.7	1.2	20.0	\$16.30
Diamond Two-Twelve-Six.....g	2.0	12.0	.....	6.0	.....
1 Sample deficient	2.0	11.5	2.5	6.1	.....
Diamond Three-Twelve-Twelve.....g	3.0	12.0	.....	12.0	.....
1 Sample passed	3.1	12.0	0.8	12.4	.....
1 Sample deficient	3.1	13.3	2.1	11.5	.....
Diamond Three-Eighteen-Nine.....g	3.0	18.0	.....	9.0	.....
1 Sample passed	3.1	18.0	0.8	9.1	.....

TABLE 12—Continued

Manufacturer and Brand	Total Nitrogen	Phosphoric Acid		Soluble Potash	Refund
		Avail.	Insol.		
E. I. duPont deNemours and Co., Inc., Wilmington, Delaware					
"Uramon"	42.00	.....	.....	.....	.....
2 Samples passed (av.)	42.7	.....	.....	.....	.....
Ellis Chemical Company, Inc. New Albany, Indiana					
Ellis Chemical Company, Inc. Brand 2-12-6.....	2.0	12.0	.....	6.0	.....
15 Samples passed (av.)	2.1	12.2	0.8	6.4	.....
14 Samples deficient	2.2	12.3	0.9	5.8	.....
	2.1	12.1	1.2	5.8	.....
	2.2	12.1	1.5	5.8	.....
	2.2	11.9	0.8	5.8	.....
	2.3	12.0	0.8	5.7	.....
	2.0	11.7	0.8	6.6	.....
	1.9	12.0	1.0	6.6	.....
	2.0	11.8	0.6	6.7	.....
	2.0	11.6	1.0	6.5	.....
	2.3	11.2	0.8	6.5	\$5.00
	2.0	11.4	0.7	6.3	.....
	2.1	11.6	1.3	6.9	.....
	1.9	12.1	1.2	6.7	.....
	2.1	11.9	1.0	6.0	.....
Ellis Chemical Company, Inc., Brand 3-12-12.....	3.0	12.0	.....	12.0	.....
4 Samples passed (av.)	3.1	12.3	0.8	12.5	.....
15 Samples deficient	3.0	11.8	0.6	12.0	.....
	2.7	12.1	0.6	12.3	.....
	2.7	11.6	0.8	12.3	.....
	2.9	12.8	0.8	12.7	.....
	2.8	12.3	1.1	12.9	.....
	2.9	13.0	0.6	12.4	.....
	3.0	11.4	0.8	12.7	.....
	3.0	12.2	1.2	11.9	.....
	3.0	11.7	1.1	11.6	.....
	3.2	11.0	1.2	13.0	\$2.50
	3.1	11.6	0.9	12.2	.....
	2.9	12.0	1.1	12.3	.....
	2.9	11.8	1.0	12.5	.....
	3.0	12.8	0.8	11.0	\$12.00
	3.0	12.7	0.9	11.9	.....
Ellis Chemical Company, Inc., Brand 6-8-6.....	6.0	8.0	.....	6.0	.....
5 Samples deficient	5.4	8.8	0.7	6.5	\$36.00
	6.0	7.8	0.6	6.2	.....
	5.0	9.4	0.7	7.7	\$24.00
	5.8	7.8	0.5	6.4	.....
	5.8	8.9	0.4	6.1	.....
Excell Laboratories, The Chicago, Illinois					
Zenke's "New Plant Life" (Liquid).....	1.4	.....	1.1	0.5	.....
1 Sample passed	1.9	.....	1.2	2.5	.....
Farmers Fertilizer Company, The Columbus, Ohio					
Farmers 12-12 Fertilizer .....	.....	12.0	.....	12.0	.....
2 Samples passed (av.)	.....	12.2	1.4	13.0	.....
Farmers 2-12-6 Fertilizer	2.0	12.0	.....	6.0	.....
4 Samples passed (av.)	2.1	12.1	1.6	6.2	.....
1 Sample deficient	2.0	11.6	2.1	6.4	.....
Farmers' 3-12-12	3.0	12.0	.....	12.0	.....
Federal Chemical Company Louisville, Kentucky					
Federal 0-12-12	3.1	11.6	1.6	12.3	.....
3 Samples deficient	.....	12.0	.....	12.0	.....
	.....	11.7	0.9	12.3	.....
	.....	11.1	1.3	12.7	\$22.60
	.....	11.7	0.9	12.4	.....

* Total phosphoric acid.

TABLE 12—Continued

Manufacturer and Brand	Total Nitrogen	Phosphoric Acid		Soluble Potash	Refund
		Avail.	Insol.		
Federal 0-14-7 .....	.....	14.0	.....	7.0	.....
1 Sample deficient	.....	13.8	0.8	7.8	.....
Federal 2-12-6	2.0	12.0	.....	6.0	.....
36 Samples passed (av.)	2.1	12.2	0.8	6.5	.....
23 Samples deficient	2.0	11.4	1.8	6.5	.....
	2.1	11.8	1.4	6.6	.....
	2.1	11.8	1.2	6.9	.....
	2.0	11.3	1.5	6.6	.....
	2.2	11.6	1.2	6.6	.....
	2.4	11.4	1.3	6.1	.....
	2.2	12.1	1.1	5.9	.....
	2.1	12.0	1.4	6.8	.....
	2.0	11.8	1.2	6.2	.....
	2.0	12.0	1.0	5.5	.....
	2.1	12.0	1.5	5.8	.....
	1.9	12.1	0.9	5.8	.....
	1.9	12.7	0.8	6.1	.....
	2.0	12.1	0.9	5.6	.....
	1.9	12.0	0.7	6.1	.....
	2.0	11.8	1.0	5.9	.....
	2.0	11.6	1.0	6.5	.....
	2.0	12.1	0.9	5.8	.....
	2.0	11.9	1.0	5.8	.....
	2.0	12.4	0.6	5.8	.....
	2.0	12.1	0.7	5.9	.....
	1.8	12.4	1.0	5.7	.....
	1.8	12.0	0.9	6.2	.....
Federal 3-12-12	3.0	12.0	.....	12.0	.....
8 Samples deficient	2.8	12.0	0.8	12.5	.....
	2.8	12.0	0.7	11.6	.....
	2.9	12.3	1.1	12.6	.....
	2.8	12.0	0.6	12.5	.....
	3.0	12.2	1.6	10.8	\$6.00
	3.2	11.7	0.6	12.2	.....
	3.1	11.9	1.2	12.4	.....
	2.7	12.0	0.7	11.1	\$7 50
Ford Motor Company Dearborn, Michigan					
Ford Sulphate of Ammonia.....	20.8	.....	.....	.....	.....
2 Samples passed (av.)	21.2	.....	.....	.....	.....
Foster Kendall Company Carmel, Indiana					
2-12-6	2.0	12.0	.....	6.0	.....
1 Sample deficient	2.0	12.1	0.9	5.8	.....
Loyal 3-18-9	3.0	18.0	.....	9.0	.....
2 Samples passed (av.)	3.0	18.8	0.4	9.8	.....
G-M Chemical Company Columbus, Ohio					
Gro-Mor Liquid Fertilizer	5.0	10.0	.....	5.0	.....
1 Sample passed	6.0	11.7	.....	5.6	.....
Goulard & Olena, Inc. Skillman, New Jersey					
Dahlia-Gladiola-Bulb & Lily Food.....	5.0	6.0	.....	15.0	.....
1 Sample passed	5.8	7.2	0.1	16.8	.....
1 Sample deficient	4.3	7.5	0.1	11.9	.54
G & O Rose Food.....	7.0	8.0	.....	5.0	.....
1 Sample passed	7.3	8.0	0.2	6.9	.....
3 Samples deficient	4.3	9.0	0.4	5.5	.....
	6.8	9.3	0.5	5.8	.....
	7.0	9.2	0.5	4.7	.....
Tree & Shrub Food 9-7-3	9.0	7.0	.....	3.0	.....
1 Sample passed	9.0	7.5	0.5	3.0	.....

TABLE 12—Continued

Manufacturer and Brand	Total Nitrogen	Phosphoric Acid		Soluble Potash	Refund
		Avail.	Insol.		
Hoffman, Inc., A. H. Landisville, Pennsylvania					
Hoffman Sheep Manure (Kiln-Dried) No. 2.....g	1.5	.....	1.0*	2.0	.....
3 Samples passed (av.)	1.7	.....	1.4*	4.0	.....
Hoffman's Dehydrated Cow Manure No. 1.....g	2.0	.....	1.0	1.0	.....
3 Samples passed (av.)	2.7	.....	2.4*	1.9	.....
Hoffman Poultry Manure (Dehydrated).....g	3.0	.....	1.0*	1.5	.....
1 Sample passed	3.4	.....	3.4*	1.9	.....
Hydroponic Chemical Company, Inc. New York City, New York					
Hydroponex.....g	7.0	6.0	.....	19.0	.....
2 Samples passed (av.)	7.4	6.8	.....	21.0	.....
Indiana Farm Bureau Coop. Ass'n, Inc. Indianapolis, Indiana					
32.5% Ammonium Nitrate.....g	32.5	.....	.....	.....	.....
3 Samples passed (av.)	33.1	.....	.....	.....	.....
Nitrate of Soda (16-0-0).....g	10.0	.....	.....	.....	.....
1 Sample passed	16.2	.....	.....	.....	.....
1 Sample deficient	15.6	.....	.....	.....	.....
Muriate of Potash.....g	.....	.....	.....	50.0	.....
4 Samples deficient	.....	.....	.....	49.8	.....
.....	.....	.....	.....	49.9	.....
.....	.....	.....	.....	49.9	.....
.....	.....	.....	.....	48.5	\$7.50
* Total phosphoric acid.					
Farm Bureau 0-20-0.....g	.....	20.0	.....	.....	.....
13 Samples passed (av.)	.....	21.0	0.8	.....	.....
0-45-0.....g	.....	45.0	.....	.....	.....
1 Sample passed	.....	46.0	2.2	.....	.....
0-9-27.....g	.....	9.0	.....	27.0	.....
3 Samples passed (av.)	.....	9.6	0.4	27.5	.....
1 Sample deficient	.....	8.6	0.5	30.3	.....
Farm Bureau 0-12-12.....g	.....	12.0	.....	12.0	.....
48 Samples passed (av.)	.....	12.4	0.7	12.7	.....
11 Samples deficient	.....	11.8	0.8	12.4	.....
.....	.....	11.8	1.0	12.0	.....
.....	.....	11.6	0.6	13.3	.....
.....	.....	11.8	0.8	12.7	.....
.....	.....	11.7	0.7	12.5	.....
.....	.....	11.6	0.7	12.8	.....
.....	.....	11.8	0.7	12.9	.....
.....	.....	11.6	1.1	12.9	.....
.....	.....	11.7	1.4	12.7	.....
.....	.....	11.6	1.2	15.2	.....
.....	.....	12.0	0.3	11.5	.....
0-20-10.....g	.....	20.0	.....	10.0	.....
8 Samples passed (av.)	.....	20.3	0.8	10.7	.....
2 Samples deficient	.....	19.7	0.7	10.8	.....
.....	.....	19.8	1.0	10.8	.....
Farm Bureau 0-20-20.....g	.....	20.0	.....	20.0	.....
15 Samples passed (av.)	.....	20.2	0.6	20.6	.....
13 Samples deficient	.....	19.5	0.7	21.1	.....
.....	.....	20.0	0.6	19.1	.....
.....	.....	19.6	0.9	21.7	.....
.....	.....	19.8	0.5	20.7	.....
.....	.....	19.4	0.6	20.9	.....
.....	.....	19.4	0.8	20.8	.....
.....	.....	19.5	0.5	21.9	.....
.....	.....	19.5	0.5	21.1	.....
.....	.....	20.0	0.7	19.8	.....
.....	.....	19.7	0.3	21.3	.....
.....	.....	19.8	0.7	21.0	.....
.....	.....	19.6	0.8	20.4	.....
.....	.....	19.4	0.9	20.3	.....

TABLE 12—Continued

Manufacturer and Brand	Total Nitrogen	Phosphoric Acid		Soluble Potash	Refund
		Avail.	Insol.		
Farm Bureau 2-12-6	2.0	12.0	.....	6.0	.....
31 Samples passed (av.)	2.1	12.4	0.9	6.7	.....
29 Samples deficient	2.0	11.6	0.8	6.4	.....
	1.9	12.0	0.6	6.8	.....
	1.9	12.0	0.8	6.3	.....
	1.9	12.9	0.4	6.6	.....
	2.1	11.8	1.1	6.7	.....
	2.0	11.6	0.8	6.8	.....
	1.9	12.0	1.7	6.6	.....
	1.8	11.7	0.8	6.0	.....
	1.8	12.0	0.8	6.5	.....
	2.2	12.4	0.6	5.9	.....
	1.9	12.3	0.6	6.5	.....
	2.0	11.7	1.0	6.2	.....
	2.4	11.3	0.9	6.1	.....
	1.8	12.0	0.9	7.1	.....
	1.9	11.4	1.2	6.5	.....
	1.9	12.0	1.2	6.8	.....
	1.9	12.7	0.4	6.6	.....
	1.9	12.3	0.9	6.6	.....
	2.0	11.7	1.3	6.5	.....
	1.8	12.5	0.7	6.4	.....
	2.0	11.9	1.2	6.5	.....
	2.0	11.7	1.3	6.5	.....
	1.8	12.1	1.6	6.5	.....
	1.9	12.7	0.7	6.2	.....
	1.9	12.7	0.8	6.2	.....
	1.9	11.6	1.4	6.2	.....
	1.9	12.0	1.2	6.5	.....
	2.4	12.4	1.1	5.8	.....
	2.3	12.5	0.8	5.9	.....
Farm Bureau 3-9-18	3.0	9.0	.....	18.0	.....
1 Sample passed	3.3	9.4	0.7	18.1	.....
5 Samples deficient	3.3	10.0	0.8	16.6	\$2.80
	3.2	9.8	0.6	16.7	.26
	3.2	10.2	0.4	17.6	.....
	3.1	10.3	0.6	17.0	\$6.00
	3.3	9.8	0.0	17.7	.....
Farm Bureau 3-12-12	3.0	12.0	.....	12.0	.....
24 Samples passed (av.)	3.1	12.3	0.8	12.8	.....
29 Samples deficient	3.1	11.4	1.4	11.9	.....
	3.0	13.0	0.9	11.9	.....
	3.0	11.7	0.9	12.2	.....
	3.2	11.7	1.2	12.1	.....
	2.9	12.0	0.3	13.1	.....
	2.8	12.0	0.4	12.9	.....
	3.0	11.8	0.5	12.8	.....
	3.1	11.9	0.8	13.3	.....
	3.0	11.6	1.2	12.0	.....
	2.9	11.7	0.7	12.5	.....
	2.9	12.1	0.8	11.6	.....
	3.0	11.9	0.6	13.1	.....
	2.8	12.4	0.5	12.5	.....
	2.9	12.1	0.8	12.3	.....
	2.8	12.0	1.0	12.7	.....
	2.7	12.5	1.2	12.3	.....
	2.8	11.6	0.9	12.6	.....
	2.7	12.0	1.3	12.8	.....
	2.6	12.0	1.2	12.4	.....
	2.7	10.9	1.3	12.0	\$15.84
	2.7	11.1	1.6	13.1	\$17.30
	2.8	12.2	1.2	12.1	.....
	2.8	11.4	1.6	12.8	\$9.20
	3.0	11.6	0.8	12.9	.....
	3.0	11.2	1.3	13.4	.....
	3.0	11.7	1.2	12.8	.....
	3.0	11.7	1.2	12.7	.....
	2.8	12.8	1.0	12.2	.....
	2.9	12.0	1.2	12.9	.....

TABLE 12—Continued

Manufacturer and Brand	Total Nitrogen	Phosphoric Acid		Soluble Potash	Refund
		Avail.	Insol.		
Farm Bureau 3-18-9	3.0	18.0	.....	9.0	.....
25 Samples passed (av.)	3.1	18.4	0.9	9.4	.....
28 Samples deficient	3.1	17.8	1.0	10.1	.....
	2.8	17.3	0.8	8.9	\$11.52
	2.7	17.7	1.0	9.4	.....
	2.8	18.1	0.7	9.3	.....
	3.1	16.8	1.2	9.7	\$12.00
	2.6	19.2	0.7	0.9	.....
	2.8	18.6	0.6	9.5	.....
	2.7	18.4	0.8	8.3	\$49.40
	2.6	17.7	0.9	10.8	.....
	2.7	19.0	0.6	9.1	.....
	3.2	18.0	0.7	8.8	.....
	3.1	17.8	0.4	9.5	.....
	2.5	19.0	0.8	7.3	\$7.34
	3.1	17.5	0.9	8.5	\$3.80
	2.6	18.2	1.0	10.4	.....
	2.9	18.3	0.8	10.0	.....
	2.7	18.3	0.7	9.1	.....
	2.9	18.1	0.9	9.2	.....
	2.8	18.3	0.8	9.6	.....
	2.9	18.3	0.7	9.4	.....
	2.9	18.6	0.6	9.4	.....
	3.2	17.7	0.9	10.0	.....
	3.0	17.4	1.2	9.5	.....
	2.6	16.0	1.1	8.4	\$2.20
	3.1	17.7	1.0	9.3	.....
	3.1	17.7	1.0	9.7	.....
	2.8	17.3	1.1	9.9	.....
	3.0	17.4	1.4	9.3	.....
8-8-8	8.0	8.0	.....	8.0	.....
1 Sample deficient	7.8	8.5	0.5	8.2	.....
International Minerals & Chemical Corporation Chicago Heights, Illinois					
International 20% Superphosphate 0-20-0 .....	.....	20.0	.....	.....	.....
1 Sample passed	.....	20.0	2.5	.....	.....
"International" Ten-Twenty 0-10-20 .....	.....	10.0	.....	20.0	.....
1 Sample deficient	.....	9.7	1.6	20.3	.....
"International" Twelve-Twelve 0-12-12 .....	.....	12.0	.....	12.0	.....
2 Samples passed (av.)	.....	12.3	1.8	12.4	.....
3 Sampled deficient	.....	11.7	1.6	14.3	.....
	.....	11.8	1.5	13.5	.....
	.....	11.9	1.6	12.6	.....
"International" Fourteen Seven .....	.....	14.0	.....	7.0	.....
1 Sample passed	.....	14.0	2.1	7.6	.....
2 Samples deficient	.....	13.5	1.6	8.4	.....
	.....	13.7	2.2	7.9	.....
"International" Twenty-Twenty 0-20-20 .....	.....	20.0	.....	20.0	.....
21 Sample passed	.....	20.2	1.4	21.4	.....
2 Samples deficient	.....	19.6	0.9	21.3	.....
	.....	21.1	1.1	19.7	.....
"International" Two-Twelve-Six 2-12-6	2.0	12.0	.....	6.0	.....
7 Samples passed (av.)	2.0	12.2	1.5	6.6	.....
4 Samples deficient	2.2	11.7	1.8	7.1	.....
	2.0	11.7	2.1	6.7	.....
	1.9	12.4	1.8	6.2	.....
	2.0	11.7	1.5	6.7	.....
"International" Three-Twelve-Twelve 3-12-12	3.0	12.0	.....	12.0	.....
2 Samples passed (av.)	3.0	12.0	1.6	13.0	.....
"International" Premium Three-Twelve-Twelve	3.0	12.0	.....	12.0	.....
1 Sample deficient	2.0	12.0	1.6	12.0	\$8.00
International Specialty Five-Ten-Five	5.0	10.0	.....	5.0	.....
1 Sample deficient	4.5	10.4	4.3	5.4	\$10.00
"International" Eight-Eight-Eight	8.0	8.0	.....	8.0	.....
1 Sample deficient	7.7	8.4	1.4	9.4	.....

TABLE 12—Continued

Manufacturer and Brand	Total Nitrogen	Phosphoric Acid		Soluble Potash	Refund
		Avail.	Insol.		
International Minerals & Chemical Corporation Cincinnati, Ohio					
International 0-20-0 .....	.....	20.0	.....	.....	.....
1 Sample passed .....	.....	20.3	1.8	.....	.....
International 0-12-12 .....	.....	12.0	.....	12.0	.....
1 Sample passed .....	.....	12.0	1.5	12.8	.....
International 2-12-6	2.0	12.0	.....	6.0	.....
7 Samples passed (av.)	2.0	12.2	1.6	6.6	.....
2 Samples deficient	1.9	12.3	1.3	6.4	.....
.....	1.9	11.6	1.8	6.6	.....
Switzerland-Ohio County Mixture 3-9-18.....g	3.0	9.0	.....	18.0	.....
1 Sample passed	3.0	9.2	1.1	18.2	.....
International 3-12-12	3.0	12.0	.....	12.0	.....
6 Samples passed (av.)	3.2	12.1	1.6	12.4	.....
5 Samples deficient	3.2	11.8	1.0	12.4	.....
.....	2.9	11.8	1.5	12.6	.....
.....	2.8	12.0	1.8	12.6	.....
.....	3.1	11.8	1.9	13.2	.....
.....	2.8	11.4	1.2	13.7	.....
International 3-18-9	3.0	18.0	.....	9.0	.....
1 Sample passed	3.0	18.7	1.6	9.4	.....
International 4-12-8	4.0	12.0	.....	8.0	.....
2 Samples deficient	3.8	12.0	1.6	8.7	.....
Jones Phosphate Company, Robin Nashville, Tennessee	3.6	11.5	2.0	8.6	\$10.01
Higrade Ground Phosphate Rock .....	.....	.....	30.0*	.....	.....
1 Sample passed .....	.....	.....	30.7*	.....	.....
Kahn Brothers Company Chicago, Illinois	.....	.....	.....	.....	.....
K-B Organic Base Fertilizer .....	.....	.....	.....	.....	.....
1 Sample deficient	4.0	12.0	.....	4.0	.....
Kingsbury & Company, Inc. Indianapolis, Indiana	5.0	13.5	1.0	3.8	.....
D & K 60% Potash .....	.....	.....	.....	60.0	.....
1 Sample passed .....	.....	.....	.....	61.8	.....
D & K 0-8-27 .....	.....	9.0	.....	27.0	.....
4 Samples passed (av.) .....	.....	9.2	0.4	27.4	.....
* Total phosphoric acid. ....	.....	.....	.....	.....	.....
D & K 0-10-20 .....	.....	10.0	.....	20.0	.....
1 Sample passed .....	.....	11.1	0.6	21.9	.....
D & K 0-12-12 .....	.....	12.0	.....	12.0	.....
25 Samples passed (av.) .....	.....	12.3	0.7	13.1	.....
7 Samples deficient .....	.....	12.6	0.6	11.9	.....
.....	.....	12.6	1.2	11.6	.....
.....	.....	12.4	0.9	10.6	\$6.00
.....	.....	13.0	0.7	10.3	\$1.70
.....	.....	12.7	0.3	10.9	\$6.50
.....	.....	13.0	0.5	10.7	\$13.00
.....	.....	13.0	0.5	11.0	\$11.30
D & K 0-14-7 .....	.....	14.0	.....	7.0	.....
1 Sample passed .....	.....	14.3	0.9	7.3	.....
1 Sample deficient .....	.....	15.2	1.3	5.8	\$12.00
D & K 0-20-20 .....	.....	20.0	.....	20.0	.....
1 Sample passed .....	.....	20.4	0.4	21.4	.....
3 Samples deficient .....	.....	18.8	0.7	21.8	\$160.50
.....	.....	19.3	0.7	21.5	.....
.....	.....	18.2	0.5	20.9	\$13.50
D & K 2-8-10	2.0	8.0	.....	10.0	.....
6 Samples passed (av.)	2.0	8.5	0.5	11.1	.....
8 Samples deficient	2.0	7.8	0.6	11.5	.....
.....	1.8	7.7	0.5	12.1	.....
.....	2.2	8.0	0.4	9.8	.....
.....	1.7	7.7	0.4	10.7	.....
.....	1.9	9.8	0.5	10.9	.....
.....	1.7	8.1	0.3	11.2	.....
.....	1.8	8.0	0.5	10.6	.....
.....	1.7	7.6	0.6	10.2	.....

TABLE 12—Continued

Manufacturer and Brand	Total Nitrogen	Phosphoric Acid		Soluble Potash	Refund
		Avail.	Insol.		
D & K 2-12-6	2.0	12.0	.....	6.0	.....
25 Samples passed (av.)	2.2	12.4	0.8	6.6	.....
13 Samples deficient	1.9	12.2	0.5	9.4	.....
	1.8	12.4	0.7	7.7	.....
	1.8	13.2	0.6	6.6	.....
	2.1	11.6	0.9	7.7	.....
	1.9	12.1	1.1	6.9	.....
	1.8	12.4	0.6	6.9	.....
	1.8	12.8	0.6	5.8	.....
	2.1	12.4	0.9	5.9	.....
	1.8	12.4	0.9	6.4	.....
	1.9	12.1	0.6	6.2	.....
	1.9	12.8	0.6	5.8	.....
	1.9	12.2	0.5	7.6	.....
	2.7	11.6	0.8	7.2	.....
D & K 3-9-18	3.0	9.0	.....	18.0	.....
3 Samples deficient	3.1	8.8	0.6	18.1	.....
	2.6	8.9	0.5	20.5	.....
	2.4	8.7	0.6	20.7	\$7.20
D & K 8-12-12	3.0	12.0	.....	12.0	.....
3 Samples passed (av.)	3.0	12.3	0.7	12.8	.....
11 Samples deficient	2.8	12.9	0.5	12.9	.....
	2.7	12.6	0.7	13.3	.....
	2.8	12.9	0.5	12.7	.....
	2.8	12.5	0.9	12.8	.....
	3.0	11.7	0.4	13.0	.....
	2.8	12.1	0.4	12.3	.....
	2.8	12.1	0.5	13.0	.....
	2.6	12.9	0.4	12.2	.....
	2.8	11.8	0.8	12.0	.....
	2.8	12.6	0.6	12.7	.....
	2.8	12.3	0.8	12.3	.....
D & K 8-20-5 (with 5% Magnesium Sulphate)					
Plant Starter	8.0	20.0	.....	5.0	.....
1 Sample deficient	5.7	21.8	0.2	8.7	\$9.20
Kova Fertilizer Company, The Greensburg, Indiana					
Kova 0-10-20 .....	.....	10.0	.....	20.0	.....
2 Samples passed (av.)	.....	10.2	0.6	21.6	.....
Kova 0-12-12 .....	.....	12.0	.....	12.0	.....
4 Samples passed (av.)	.....	12.3	1.3	12.7	.....
1 Sample deficient	.....	11.6	1.7	14.3	.....
Kova 0-20-20 .....	.....	20.0	.....	20.0	.....
1 Sample passed	.....	20.0	0.6	20.6	.....
Kova 2-12-6	2.0	12.0	.....	6.0	.....
6 Samples passed (av.)	2.0	12.3	1.1	6.5	.....
3 Samples deficient	1.8	12.4	0.9	6.4	.....
	2.0	11.8	1.2	6.7	.....
	2.3	11.7	1.4	6.8	.....
Kova 3-12-12	3.0	12.0	.....	12.0	.....
9 Samples passed (av.)	3.4	12.3	1.2	12.4	.....
1 Sample deficient	3.5	12.3	1.6	11.6	.....
Longaker Mills, Inc. Waterloo, Indiana					
P.D.Q. 0-9-27 .....	.....	9.0	.....	27.0	.....
1 Sample deficient	.....	9.2	0.4	26.8	.....
P.D.Q. 3-9-18	3.0	9.0	.....	18.0	.....
1 Sample passed	3.6	9.1	0.3	19.1	.....
P.D.Q. 8-8-8	8.0	8.0	.....	8.0	.....
1 Sample deficient	4.8	10.2	0.5	10.0	\$6.40
J. A. McCarty Seed Company Evansville, Indiana					
Lucky Jim 0-12-12 .....	.....	12.0	.....	12.0	.....
1 Sample passed	.....	12.2	0.2	14.5	.....
Lucky Jim 3-12-12	3.0	12.0	.....	12.0	.....
1 Sample passed	3.0	12.8	0.2	13.8	.....
1 Sample deficient	3.0	11.7	0.2	12.3	.....

TABLE 12—Continued

Manufacturer and Brand	Total Nitrogen	Phosphoric Acid		Soluble Potash	Refund
		Avail.	Insol.		
Midwestern Phosphate Company Madison, Wisconsin					
Midwestern 20% Superphosphate .....	.....	20.0	.....	.....	.....
3 Samples passed (av.) .....	.....	20.9	0.6	.....	.....
National Chemical Company Louisville, Kentucky					
Big Pay 2-12-6 Fertilizer	2.0	12.0	.....	6.0	.....
8 Samples passed (av.)	2.3	12.6	0.8	6.4	.....
1 Sample deficient	2.3	13.6	0.9	5.0	\$40.00
Norris Fertilizer Company, The Rushville, Indiana					
Norris' High Quality 0-14-7 .....	.....	14.0	.....	7.0	.....
1 Sample passed .....	.....	14.2	0.6	9.2	.....
Norris' High Quality 2-12-6	2.0	12.0	.....	6.0	.....
11 Samples passed (av.)	2.0	12.6	1.0	6.2	.....
4 Samples deficient	2.0	11.7	1.4	6.2	.....
.....	2.0	11.7	1.0	6.2	.....
.....	1.9	11.6	1.5	7.3	.....
.....	1.9	12.3	1.5	6.4	.....
Norris' High Quality 8-12-12	3.0	12.0	.....	12.0	.....
1 Sample passed	3.1	12.0	0.7	12.6	.....
4 Samples deficient	1.8	32.0	0.5	6.2	\$5.74
.....	2.8	12.0	0.7	11.8	.....
.....	2.7	12.5	0.2	13.8	.....
.....	2.7	12.1	1.1	9.9	\$20.25
Norris' High Quality 8-8-8	8.0	8.0	.....	8.0	.....
2 Samples deficient	7.1	9.6	0.2	9.2	\$21.60
.....	7.6	8.9	0.6	9.6	.....
V. W. Norris & Son, Inc. Rushville, Indiana					
2-12-6	2.0	12.0	.....	6.0	.....
3 Samples passed (av.)	2.0	12.2	0.6	6.5	.....
4 Samples deficient	1.7	12.6	1.2	6.3	.....
.....	1.7	12.8	0.8	7.0	.....
.....	1.7	12.3	0.7	6.2	.....
.....	1.9	12.0	0.9	6.3	.....
North American Fertilizer Company Louisville, Kentucky					
Ammonium Nitrate 32.5	32.5	.....	.....	.....	.....
1 Sample passed	33.3	.....	.....	.....	.....
North American 2-12-6 Fertilizer	2.0	12.0	.....	6.0	.....
15 Samples passed (av.)	2.3	12.6	0.8	6.4	.....
2 Samples deficient	2.1	12.4	0.8	5.9	.....
.....	2.2	13.4	0.4	5.5	.....
3-0-6 Fertilizer	3.0	9.0	.....	6.0	.....
2 Samples passed (av.)	3.5	9.4	0.9	7.0	.....
7 Samples deficient	2.6	6.3	3.9	6.2	\$16.72
.....	3.2	9.9	0.3	5.8	.....
.....	3.0	9.8	0.5	5.9	.....
.....	2.8	9.0	0.8	4.8	\$80.00
.....	2.9	9.6	0.4	6.4	.....
.....	3.1	8.9	0.5	6.9	.....
.....	2.6	7.6	2.6	6.2	\$5.10
*North American 4-12-4 Fertilizer	4.0	12.0	.....	4.0	.....
1 Sample deficient	4.4	11.2	2.6	4.8	\$8.00
Plant Marvel Laboratories Chicago, Illinois					
Plant Marvel Formula "A"	12.0	31.0	.....	14.0	.....
1 Sample passed	13.8	31.9	0.1	16.0	.....
Lawn Marvel 18-16-6	18.0	16.0	.....	6.0	.....
1 Sample passed	18.6	16.9	0.1	8.0	.....
Plantabbs Company Baltimore, Maryland					
Fulton's Plantabbs	11.0	15.0	.....	20.0	.....
1 Sample deficient	10.9	18.4	.....	24.7	.....

TABLE 12—Continued

Manufacturer and Brand	Total Nitrogen	Phosphoric Acid		Soluble Potash	Refund
		Avail.	Insol.		
Price Chemical Company, The Louisville, Kentucky					
A-1 Grain Grower	2.0	12.0	.....	6.0	.....
15 Samples passed (av.)	2.2	12.9	0.8	6.1	.....
3 Samples deficient	2.3	12.5	1.1	5.7	.....
	2.1	12.8	1.0	5.7	.....
	2.0	13.2	1.1	5.7	.....
Three Twelve Twelve	3.0	12.0	.....	12.0	.....
2 Samples passed (av.)	3.4	12.2	0.4	12.8	.....
2 Samples deficient	3.4	12.0	0.6	11.8	.....
	2.8	12.7	1.0	12.5	.....
Truck Garden 4-12-4	4.0	12.0	.....	4.0	.....
1 Sample passed	4.4	12.5	0.6	4.9	.....
Pulverized Manure Company, The Chicago, Illinois					
Wizard Brand Cow Manure	2.0	.....	1.0*	1.0	.....
1 Sample deficient	1.9	.....	1.3*	2.6	.....
Wizard Brand Pulverized Sheep Manure.....	2.0	.....	1.0*	2.0	.....
1 Sample passed	2.4	.....	1.7*	2.6	.....
1 Sample deficient	1.8	.....	1.8*	3.5	.....
Ralston Purina Company St. Louis, Missouri					
Purina Plant Good Specialty Fertilizer.....	5.0	10.0	1.0	5.0	.....
1 Sample passed	5.0	10.8	0.9	5.8	.....
4 Samples deficient	4.7	10.1	4.3	5.6	.....
	4.9	10.8	1.2	5.1	.....
	5.2	7.4	3.7	5.6	\$9.75
	4.8	11.0	4.7	5.2	.....
E. Rauh & Sons Fertilizer Company Indianapolis, Indiana					
Rauh's Red Star 0-10-20 .....	.....	10.0	.....	20.0	.....
1 Sample passed	.....	10.3	0.7	21.1	.....
4 Samples deficient	.....	10.1	0.3	19.9	.....
	.....	10.9	0.4	19.8	.....
	.....	10.1	0.3	19.8	.....
	.....	9.6	0.5	20.3	.....
Rauh's Red Star 0-14-7.....	.....	14.0	.....	7.0	.....
14 Samples passed (av.)	.....	14.3	0.8	7.4	.....
7 Samples deficient	.....	13.9	1.0	7.1	.....
	.....	13.8	1.1	6.9	.....
	.....	13.8	0.9	7.3	.....
	.....	13.7	1.0	7.2	.....
	.....	13.7	1.1	7.3	.....
	.....	14.2	0.9	6.6	.....
	.....	14.9	0.8	6.9	.....
Rauh's Red Star 0-12-12 .....	.....	12.0	.....	12.0	.....
14 Samples passed (av.)	.....	12.4	0.6	12.3	.....
6 Samples deficient	.....	11.8	0.8	12.8	.....
	.....	12.4	0.6	11.1	.....
	.....	11.9	0.7	12.2	.....
	.....	12.5	0.5	11.8	.....
	.....	12.0	0.6	11.9	.....
	.....	11.7	1.0	11.7	.....
Rauh's Red Star 2-12-5 Fertilizer .....	.....	2.0	.....	6.0	.....
32 Samples passed (av.)	2.0	12.2	0.8	6.2	.....
22 Samples deficient	1.8	12.3	0.7	6.0	.....
	1.8	12.4	0.8	6.8	.....
	1.9	12.7	1.0	5.8	.....
	1.9	12.1	0.9	6.1	.....
	1.9	12.1	0.9	6.8	.....
	2.0	12.4	0.6	5.9	.....
	1.9	12.0	0.8	6.4	.....
	2.0	12.0	0.6	5.9	.....

* Total phosphoric acid.

TABLE 12—Continued

Manufacturer and Brand	Total Nitrogen	Phosphoric Acid		Soluble Potash	Refund
		Avail.	Insol.		
	2.0	11.5	0.9	6.9	.....
	2.0	11.8	2.1	6.0	.....
	2.0	11.6	1.7	6.8	.....
	2.2	11.7	1.1	6.0	.....
	2.0	12.4	0.9	5.9	.....
	1.0	12.4	0.8	6.3	.....
	2.1	12.8	1.4	5.8	.....
	1.9	12.0	0.7	5.8	.....
	2.3	11.8	1.0	6.0	.....
	1.8	12.0	0.8	6.8	.....
	2.0	11.9	0.8	6.4	.....
	1.8	13.0	0.8	6.0	.....
	2.0	12.3	1.0	5.8	.....
	1.9	12.2	1.3	6.3	.....
Rauh's Red Star 3-9-18 Fertilizer.....G	3.0	9.0	.....	18.0	.....
1 Sample passed	3.0	9.1	0.5	18.6	.....
Rauh's Red Star 3-12-12 Fertilizer.....G	3.0	12.0	.....	12.0	.....
10 Samples passed (av.)	3.1	12.2	0.7	12.2	.....
11 Samples deficient	2.9	12.3	0.5	12.5	.....
	2.8	12.7	0.8	11.5	.....
	2.9	11.7	0.7	12.9	.....
	2.9	12.4	0.6	12.0	.....
	2.9	12.4	0.7	11.1	.....
	2.8	12.0	0.6	12.0	.....
	3.2	12.0	0.5	11.9	.....
	2.8	11.8	0.8	12.3	.....
	2.9	11.6	0.9	12.4	.....
	2.8	12.0	0.8	12.2	.....
	2.8	12.4	0.8	12.2	.....
F. S. Royster Guano Company					
Indianapolis, Indiana		20.0	.....	.....	.....
Royster's 20% Superphosphate.....G		20.3	0.8	.....	.....
8 Samples passed (av.)		9.0	.....	27.0	.....
Royster 0-9-27.....G		9.1	0.5	27.2	.....
2 Samples passed (av.)		10.0	.....	20.0	.....
Royster's 0-10-20.....G		10.4	0.4	20.9	.....
3 Samples passed (av.)		12.0	0.5	12.0	.....
Roysters 0-12-12.....G		12.2	0.9	12.7	.....
12 Samples passed (av.)		13.3	0.8	11.0	\$12.00
3 Samples deficient		11.6	1.2	13.3	.....
		11.7	0.9	13.1	.....
Royster 0-14-7.....G		14.0	.....	7.0	.....
5 Samples passed (av.)		14.8	1.0	7.5	.....
1 Sample deficient		15.6	0.6	6.9	.....
Royster 2-12-6.....G	2.0	12.0	.....	6.0	.....
33 Samples passed (av.)	2.1	12.2	0.8	6.5	.....
2 Samples deficient	1.8	11.8	0.7	6.5	.....
	1.9	12.1	0.8	6.7	.....
Royster 3-9-18.....G	3.0	9.0	.....	18.0	.....
1 Sample passed	3.0	9.2	0.6	19.0	.....
Royster 3-12-12.....G	3.0	12.0	0.5	12.0	.....
5 Samples passed (av.)	3.1	12.7	0.7	12.9	.....
5 Samples deficient	3.0	13.1	0.6	11.7	.....
	2.8	12.8	0.5	12.3	.....
	3.0	12.7	0.7	11.8	.....
	3.0	11.9	1.0	13.4	.....
	2.9	12.3	0.5	12.4	.....
Royster 8-8-8.....G	8.0	8.0	.....	8.0	.....
1 Sample deficient					
Ruhm Phosphate & Chemical Company					
Mt. Pleasant, Tennessee					
Red Seal Brand Ruhm's Phosphate Rock.....G	7.9	8.7	0.5	8.8	.....
2 Samples passed (av.)			30.0*	.....	.....
			30.6*	.....	.....

TABLE 12—Continued

Manufacturer and Brand	Total Nitrogen	Phosphoric Acid		Soluble Potash	Refund
		Avail.	Insol.		
Schrock Fertilizer Service Congerville, Illinois					
Florida Rock Phosphate (32%)	G		32.0*		
4 Samples passed (av.)			33.0*		
Florida Phosphate Rock	G		33.0*		
1 Sample passed			33.1*		
2 Samples deficient			32.4*		
.....			32.9*		
Superphosphate 0-20-0	G	20.0			
1 Sample passed		20.0	1.0		
The O. M. Scott & Sons Company Marysville, Ohio					
Scott Turf Builder	G	8.0	8.0	4.0	
1 Sample deficient		7.9	8.5	0.5	\$.23
Scott Lawn Food plus Weed Control	G	9.0	9.0	0.0	
1 Sample deficient		10.1	7.5	0.1	\$9.95
Sears, Roebuck & Company Chicago, Illinois					
Garden Master Cattle Manure	G	1.7	1.0*	1.5	
1 Sample deficient		2.0	0.9*	2.6	
Garden Master Plant Food 4-12-4	G	4.0	12.0	4.0	
1 Sample deficient		4.1	11.7	5.4	
Sewerage Commission of The City of Milwaukee Milwaukee, Wisconsin					
Milorganite	G	0.0	2.7*		
4 Samples passed (av.)		0.1	3.2*		
Smith Agricultural Chemical Company, The Indianapolis, Indiana					
Smith's 20% Superphosphate	G	20.0			
1 Sample passed		20.0	1.9		
Sacco 0-10-20	G	10.0		20.0	
5 Samples passed (av.)		10.4	1.1	20.7	
2 Samples deficient		10.4	1.1	16.9	\$40.30
.....		11.4	0.9	19.4	
Sacco 0-12-12	G	12.0		12.0	
6 Samples passed (av.)		12.2	1.2	12.6	
7 Samples deficient		11.7	1.2	12.4	
.....		11.6	1.1	12.1	
.....		11.0	0.8	13.1	
.....		12.1	1.2	11.9	
.....		11.8	0.6	12.5	
.....		12.2	1.1	11.8	
.....		12.4	1.3	11.9	
Sacco 0-14-7	G	14.0		7.0	
2 Samples deficient		13.6	1.3	7.5	
.....		13.2	1.0	7.0	\$4.00
Sacco 2-12-6	G	2.0	12.0	6.0	
21 Samples passed (av.)		2.1	12.3	6.4	
24 Samples deficient		1.8	12.3	1.1	6.5
.....		1.8	12.0	0.7	6.3
.....		1.7	11.7	0.7	6.2
.....		2.1	11.8	1.2	6.7
.....		2.1	11.6	0.8	6.7
.....		2.1	11.8	1.0	6.5
.....		2.1	11.9	1.0	6.8
.....		2.1	11.7	1.0	6.2
.....		2.1	11.8	1.0	6.3
.....		2.0	11.8	1.0	6.8
.....		2.0	11.6	1.2	6.6
.....		2.0	11.4	1.7	6.4
.....		1.9	12.1	1.6	6.4
.....		1.9	12.5	1.2	6.5
.....		1.7	12.1	1.5	6.0
.....		1.9	12.0	1.3	6.3

* Total phosphoric acid.

TABLE 12—Continued

Manufacturer and Brand	Total Nitrogen	Phosphoric Acid		Soluble Potash	Refund
		Avail.	Insol.		
	1.7	12.4	1.3	6.3	.....
	1.7	12.0	1.8	6.4	.....
	1.6	12.1	1.4	6.2	.....
	1.9	12.0	1.2	6.4	.....
	2.0	11.7	1.6	6.3	.....
	1.9	11.7	1.1	6.3	.....
	2.2	12.3	1.4	5.9	.....
	1.6	12.4	1.4	6.2	.....
Smiths Sacco 3-9-18	3.0	9.0	.....	18.0	.....
2 Samples deficient	2.9	9.9	0.9	19.0	.....
	2.7	9.5	0.7	18.8	.....
Smiths Sacco 3-12-12	3.0	12.0	.....	12.0	.....
5 Samples passed (av.)	3.0	12.0	0.7	12.5	.....
17 Samples deficient	2.9	12.3	0.8	12.2	.....
	2.8	12.0	0.8	12.4	.....
	3.0	12.1	1.1	11.7	.....
	2.8	12.0	0.9	12.0	.....
	2.7	12.0	0.6	11.9	.....
	2.8	11.6	0.7	13.0	.....
	2.9	12.9	0.8	12.6	.....
	2.8	12.7	0.7	11.8	.....
	3.0	13.0	0.8	11.8	.....
	3.0	12.8	0.8	11.8	.....
	2.9	12.7	1.1	12.1	.....
	3.3	12.6	0.6	11.8	.....
	2.8	12.5	0.7	11.5	.....
	2.8	12.8	0.8	13.2	.....
	3.0	12.5	1.0	11.5	.....
	2.8	12.6	0.7	12.4	.....
	3.0	12.0	0.8	11.8	.....
Sacco 3-18-9	3.0	18.0	.....	9.0	.....
2 Samples deficient	2.6	18.9	0.7	9.9	.....
	2.8	18.4	0.8	9.2	.....
Sacco Plant Food	4.0	12.0	.....	4.0	.....
2 Samples passed (av.)	4.1	12.0	1.2	4.6	.....
2 Samples deficient	3.9	12.0	1.1	4.8	.....
	3.8	11.7	1.2	4.9	.....
Sacco 8-8-8	8.0	8.0	.....	8.0	.....
1 Sample passed	8.0	8.3	0.4	8.0	.....
5 Samples deficient	7.7	8.4	0.6	8.1	.....
	7.2	8.6	0.6	7.9	\$35.68
	7.9	8.0	0.6	7.8	.....
	7.6	8.6	0.7	7.9	.....
	7.6	8.3	0.8	8.1	.....
Greens and Fairway Mixture (10-6-4)	10.0	6.0	.....	4.0	.....
2 Samples deficient	8.1	8.2	0.7	5.2	\$7.60
	8.4	7.7	0.8	5.6	\$4.00
Southern Acid & Sulphur Company St. Louis, Missouri					
Sacco, 20% Superphosphate .....	.....	20.0	.....	.....	.....
9 Samples passed (av.)	.....	20.8	.....	.....	.....
Spencer Chemical Company Kansas City, Missouri					
Ammonium Nitrate Fertilizer	32.5	.....	.....	.....	.....
3 Samples passed (av.)	33.0	.....	.....	.....	.....
Standard Wholesale Phosphate & Acid Works, Inc. Baltimore, Maryland					
Standard U. S. 2-12-6	2.0	12.0	.....	6.0	.....
2 Samples passed (av.)	2.0	12.4	1.4	6.2	.....
Standard 3-12-6	3.0	12.0	.....	6.0	.....
1 Sample deficient	3.0	12.9	1.0	6.3	.....
Standard 3-12-12	3.0	12.0	.....	12.0	.....
1 Sample deficient	2.8	12.0	0.8	12.5	.....

TABLE 12—Continued

Manufacturer and Brand	Total Nitrogen	Phosphoric Acid		Soluble Potash	Refund
		Avail.	Insol.		
Hugo Steinkamp Holland, Indiana					
0-12-12 .....	.....	12.0	.....	12.0	.....
1 Sample passed	.....	12.4	1.4	12.0	.....
Steinkamp 2-12-6 .....	.....	12.0	.....	6.0	.....
2 Samples passed (av.)	2.0	12.6	1.0	6.2	.....
1 Sample deficient	1.9	11.8	1.0	6.4	.....
3-12-12 Fertilizer	3.0	12.0	.....	12.0	.....
2 Samples deficient	2.6	12.0	1.0	11.5	\$5.72
	3.1	11.6	1.0	12.2	.....
Stockdale Fertilizer Company Morris, Illinois					
Ovene (Sheep Manure)	2.0	.....	1.0*	2.0	.....
1 Sample passed	2.1	.....	1.5*	2.4	.....
Swift & Company Fertilizer Works Chicago, Illinois					
Swift's Red Steer 0-10-20 .....	.....	10.0	.....	20.0	.....
1 Sample deficient	.....	9.4	1.8	21.2	.....
Swift's Red Steer 0-12-12 Fertilizer .....	.....	12.0	.....	12.0	.....
5 Samples passed (av.)	.....	12.5	1.7	12.4	.....
3 Samples deficient	.....	12.0	1.5	11.9	.....
	.....	12.2	2.0	10.6	\$8.40
	.....	12.3	2.4	11.6	.....
Swift's Red Steer 0-14-7 .....	.....	11.0	.....	7.0	.....
4 Samples passed (av.)	.....	14.4	2.1	7.7	.....
Pulverized Sheep Manure	1.8	.....	1.0*	1.7	.....
1 Sample passed	2.0	.....	1.5*	2.6	.....
Swift's Red Steer 2-12-6	2.0	12.0	.....	6.0	.....
21 Samples passed (av.)	2.2	12.9	1.5	6.8	.....
18 Samples deficient	1.9	12.2	1.7	6.3	.....
	2.1	12.5	0.4	5.9	.....
	2.0	11.8	1.4	6.1	.....
	1.8	12.8	1.0	6.4	.....
	2.0	11.6	1.6	6.0	.....
	2.0	12.4	2.3	5.8	.....
	3.2	10.8	2.8	5.4	\$2.01
	1.9	12.0	2.1	6.4	.....
	1.9	12.9	0.9	6.0	.....
	2.0	11.9	1.6	7.4	.....
	1.9	12.8	2.4	6.4	.....
	1.9	12.5	2.4	6.1	.....
	1.9	12.1	2.1	6.4	.....
	1.7	12.3	2.1	6.8	.....
	2.1	11.5	1.5	6.5	.....
	2.1	11.8	0.6	6.5	.....
	2.0	11.6	3.3	6.0	.....
	1.9	12.4	2.2	6.2	.....
Swift's Red Steer 3-12-12	3.0	12.0	.....	12.0	.....
2 Samples deficient	2.9	13.3	1.0	11.8	.....
	2.7	12.0	2.3	11.8	.....
Vigoro	4.0	12.0	.....	4.0	.....
9 Samples passed (av.)	4.1	12.7	1.4	4.5	.....
10 Samples deficient	3.6	12.3	2.4	4.3	.....
	4.1	11.7	1.8	4.9	.....
	3.8	12.2	2.4	4.7	.....
	3.8	12.2	1.0	4.5	.....
	3.8	12.9	0.7	4.4	.....
	4.0	12.1	2.4	3.9	.....
	3.7	12.3	2.5	4.6	.....
	3.9	12.0	2.7	4.0	.....
	3.8	12.1	2.0	4.2	.....
	3.9	11.5	3.1	4.6	.....
Vigoro Victory Garden 4-12-4	4.0	12.0	.....	4.0	.....
1 Sample deficient	4.1	11.5	1.0	4.6	.....
* Total phosphoric acid.					

TABLE 12—Continued

Manufacturer and Brand	Total Nitrogen	Phosphoric Acid		Soluble Potash	Refund
		Avail.	Insol.		
Swift's Red Steer 4-12-4	4.0	12.0	.....	4.0	.....
5 Samples passed (av.)	4.1	12.6	0.8	4.9	.....
3 Samples deficient	3.5	12.0	1.6	5.0	\$5.00
	3.8	11.6	0.7	5.2	.....
	3.7	11.8	0.8	4.8	.....
Swift's Red Steer 8-8-8	8.0	8.0	.....	8.0	.....
1 Sample deficient	7.8	8.2	1.6	8.6	.....
Swift's Red Steer 10-6-4	10.0	6.0	.....	4.0	.....
1 Sample deficient	9.2	6.2	1.6	4.4	\$10.80
Swift & Company Fertilizer Works Hammond, Indiana					
Blenn 8-12-12	3.0	12.0	.....	12.0	.....
2 Samples passed (av.)	3.0	12.9	1.4	13.0	.....
7 Samples deficient	2.6	12.8	2.1	11.4	\$5.60
	3.1	11.6	2.6	12.4	.....
	3.0	11.8	2.4	11.8	.....
	2.6	12.1	2.4	18.6	.....
	2.9	13.0	1.7	11.8	.....
	2.9	12.0	2.6	12.6	.....
	2.9	12.7	2.1	11.9	.....
Vigoro Commercial Grower 6-12-6	6.0	12.0	.....	6.0	.....
1 Sample deficient	5.2	12.0	2.0	5.6	\$10.00
Tennessee Corporation Lockland, Ohio					
0-20-0 .....	.....	20.0	.....	.....	.....
2 Samples passed (av.)	.....	20.6	0.9	.....	.....
0-30-0 Superphosphate .....	.....	30.0	.....	.....	.....
1 Sample deficient	.....	29.3	0.9	.....	.....
0-45-0 .....	.....	45.0	.....	.....	.....
9 Samples passed (av.)	.....	45.9	0.4	.....	.....
10 Samples deficient	.....	44.6	0.2	.....	.....
	.....	44.6	0.2	.....	.....
	.....	44.6	0.2	.....	.....
	.....	43.6	0.6	.....	\$42.00
	.....	44.5	0.5	.....	.....
	.....	44.4	0.6	.....	.....
	.....	44.4	1.1	.....	.....
	.....	32.0	0.4	.....	\$97.50
	.....	44.1	0.4	.....	\$28.25
	.....	44.8	0.2	.....	.....
0-12-12 .....	.....	12.0	.....	12.0	.....
2 Samples passed (av.)	.....	12.0	1.0	12.2	.....
0-20-20 .....	.....	20.0	.....	20.0	.....
2 Samples passed (av.)	.....	21.2	0.5	20.6	.....
2-12-6	2.0	12.0	.....	6.0	.....
24 Samples passed (av.)	2.0	12.5	1.1	6.3	.....
7 Samples deficient	2.0	12.6	1.0	5.6	.....
	2.2	12.0	2.2	5.9	.....
	1.9	12.5	0.7	6.0	.....
	1.9	12.6	0.9	6.3	.....
	1.8	12.4	0.9	6.4	.....
	2.3	12.7	1.0	5.6	.....
	1.9	12.4	0.7	6.0	.....
3-12-12	3.0	12.0	.....	12.0	.....
1 Sample passed	3.0	12.9	0.9	12.1	.....
1 Sample deficient	2.9	12.7	0.2	11.9	.....
3-18-9	3.0	18.0	.....	9.0	.....
15 Samples passed (av.)	3.0	18.7	0.7	9.3	.....
18 Samples deficient	3.2	18.3	0.3	8.7	.....
	3.1	18.3	0.6	8.8	.....
	2.7	19.1	0.5	9.2	.....
	2.9	18.5	1.1	9.1	.....
	2.9	18.9	0.7	9.3	.....

TABLE 12—Continued

	Total Nitrogen	Phosphoric Acid		Soluble Potash	Refund
		Avail.	Insol.		
	3.5	19.0	0.6	8.9	.....
	2.9	19.8	0.6	9.5	.....
	2.9	18.9	0.6	9.7	.....
	2.9	18.1	0.7	9.3	.....
	2.9	18.0	0.8	9.2	.....
	2.9	18.7	0.6	9.2	.....
	2.9	19.0	0.8	9.6	.....
	2.8	18.6	0.8	9.3	.....
	2.9	18.8	0.8	9.0	.....
	2.9	18.9	0.5	9.1	.....
	3.0	18.0	0.8	8.8	.....
	3.0	19.0	0.8	8.8	.....
	3.1	18.7	0.7	8.7	.....
Superior Quality 4-12-8	4.0	12.0	0.5	8.0	.....
1 Sample passed	4.0	12.4	0.9	8.5	.....
2 Samples deficient	3.8	12.4	0.6	8.2	.....
	3.8	13.0	0.8	8.2	.....
4-12-8	4.0	12.0	.....	8.0	.....
5 Samples passed (av.)	4.1	12.5	0.6	8.4	.....
5 Samples deficient	4.0	12.2	1.0	7.8	.....
	4.0	11.9	0.9	7.8	.....
	4.0	11.9	0.7	7.8	.....
	3.9	13.7	0.7	8.4	.....
	4.0	12.7	0.4	7.9	.....
4-24-12	4.0	24.0	.....	12.0	.....
1 Sample passed	4.0	26.1	0.5	12.1	.....
3 Samples deficient	3.9	24.6	0.9	11.7	.....
	3.7	24.0	0.2	12.0	.....
	3.6	24.1	0.4	11.9	.....
Loma Plant Food 5-10-5	5.0	10.0	.....	5.0	.....
2 Samples passed (av.)	5.2	10.4	0.5	5.2	.....
1 Sample deficient	4.8	11.2	0.4	6.0	.....
Tennessee Corporation New Albany, Indiana					
0-20-0 .....	.....	20.0	.....	.....	.....
1 Sample passed	.....	21.4	0.3	.....	.....
0-30-0 Superphosphate Superior Quality Fertilizer....	.....	30.0	.....	.....	.....
2 Samples passed (av.)	.....	30.6	0.4	.....	.....
0-45-0 Superior Quality Fertilizer .....	.....	45.0	.....	.....	.....
12 Samples passed (av.)	.....	45.5	0.4	.....	.....
13 Samples deficient	.....	44.4	0.8	.....	.....
	.....	44.6	0.6	.....	.....
	.....	44.6	0.4	.....	.....
	.....	44.8	0.2	.....	.....
	.....	44.7	0.2	.....	.....
	.....	44.5	0.5	.....	.....
	.....	44.6	1.0	.....	.....
	.....	43.9	0.1	.....	\$18.80
	.....	48.6	0.2	.....	\$8.75
	.....	44.2	0.5	.....	\$7.00
	.....	44.2	0.2	.....	\$7.00
	.....	44.2	0.2	.....	\$1.40
	.....	44.2	0.1	.....	\$6.00
0-12-12 .....	.....	12.0	.....	12.0	.....
3 Samples passed (av.)	.....	12.4	0.5	12.6	.....
3 Samples deficient	.....	12.9	0.8	10.3	\$6.80
	.....	13.0	0.5	10.5	\$4.50
	.....	12.6	0.9	10.6	\$56.00
0-20-20 .....	.....	20.0	.....	20.0	.....
1 Sample passed	.....	20.8	0.5	21.2	.....